

United States Air Force
611 Air Support Group
611 Civil Engineer Squadron

Elmendorf AFB, Alaska

FINAL

Indian Mountain LRRS, Alaska

CONSTRUCTION REPORT FOR
INTERIM REMEDIAL ACTION AND
TREATABILITY STUDY

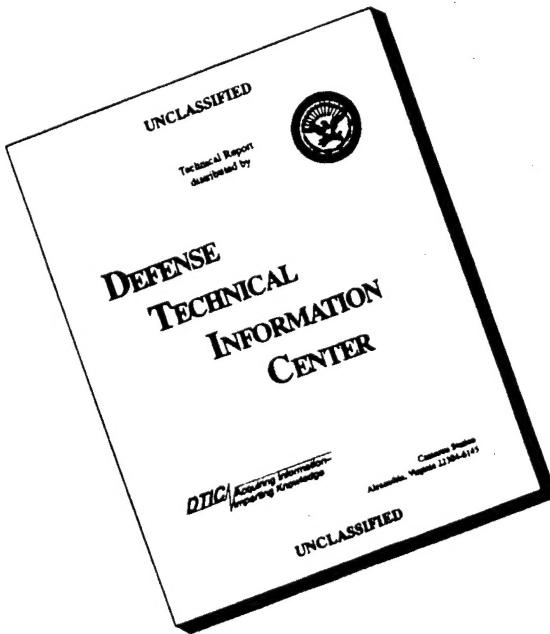
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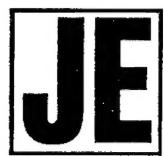
FINAL

Indian Mountain LRRS, Alaska

**CONSTRUCTION REPORT FOR
INTERIM REMEDIAL ACTION AND
TREATABILITY STUDY**

DECEMBER 1995

By:



JACOBS ENGINEERING GROUP INC.

600 17th Street, Suite 1100N

Denver, CO 80202

19951215 084

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| 19. ABSTRACT (Continue on reverse if necessary and identify by block number) This Final Construction Report is provided under Contract No. F41624-94-D-8046-0004, between the U.S. Air Force and Jacobs Engineering Group Inc. The purpose of this report is to describe and detail the activities conducted as part of the Interim Remedial Action and Treatability Study at Indian Mountain Long Range Radar Station, Alaska. This report contains five sections. Section 1.0 provides introduction and background information, and describes general tasks completed. Section 2.0 describes the construction activities. Section 3.0 presents the environmental sampling results and data evaluation for the two tasks. Conclusions and final recommendations are in Section 4.0. Section 5.0 lists references cited in the report. | | | | |
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PREFACE

This report describes several tasks completed in 1995 at Indian Mountain Long Range Radar Station, Alaska. An interim remedial action was completed, a treatability study containment cell was constructed, and investigation-derived waste was managed. This work was performed in accordance with the requirements of Contract No. F41624-94-D-8046, Delivery Order No. 0004, between the U.S. Air Force and Jacobs Engineering Group Inc.

The Jacobs Engineering Group Inc. Project Manager for this delivery order is Ms. Sarah Brown. Mr. Samer Karmi of the Air Force Center for Environmental Excellence is the Alaska Restoration Team Chief for this task.

Approved:



Warner K. Reeser
Program Manager
Jacobs Engineering Group Inc.

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Appendix A OT08 Test Pit Field Sampling Forms

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ACRONYMS

| | |
|-----------------------|---|
| ADEC | Alaska Department of Environmental Conservation |
| bgs | below ground surface |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act of 1980 |
| CO₂ | carbon dioxide |
| DRO | diesel range organic compounds |
| EPA | Environmental Protection Agency |
| F | Fahrenheit |
| GRO | gasoline range organic compounds |
| HDPE | high-density polyethylene |
| ID | inside diameter |
| IDW | investigation-derived waste |
| IRA | Interim Remedial Action |
| Jacobs | Jacobs Engineering Group Inc. |
| LRRS | Long Range Radar Station |
| mg/L | milligrams per liter |
| O₂ | oxygen |
| OD | outside diameter |
| PCB | polychlorinated biphenyl |
| ppm | parts per million |
| RI/FS | Remedial Investigation/Feasibility Study |
| SAP | Sampling and Analysis Plan |
| SVOC | semivolatile organic compound |
| TCLP | Toxicity Characteristic Leaching Procedure |
| µg/L | micrograms per liter |
| UST | underground storage tank |
| UTL | upper tolerance limit |
| VOC | volatile organic compound |
| WACS | White Alice Communications System |
| ° | degree |

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1.0 INTRODUCTION

During the summer of 1995, two construction tasks were conducted at Indian Mountain Long Range Radar Station (LRRS). This work was completed under the U.S. Air Force (Air Force) Installation Restoration Program (IRP). Additional IRP source area sampling was also performed and is described in a separate report. The original design and sampling approach for these tasks was described in the Work Plan and Sampling and Analysis Plan (SAP) for Interim Remedial Actions (Air Force 1995a). The construction tasks included excavation of a water diversion ditch as an interim remedial action (IRA). Also, a biotreatment cell was constructed to conduct a treatability study of contaminated soils excavated during 1994 sampling activities. This report describes the completion of these two construction tasks, analytical results from associated soil and water sampling, and conclusions based on observations and sampling results. The results and conclusions of the additional IRP source area sampling component of the plan are presented in a separate report, the Remedial Investigation/Feasibility Study (RI/FS) Report Addendum (Air Force 1995b).

1.1 Interim Remedial Action

Interim remedial actions are taken to contain contamination or prevent further migration of contaminants. In August 1995, an IRA was completed at source area OT08, the former White Alice Communications System (WACS) facility, located below the summit of Indian Mountain. The goal of the action was to prevent further migration of surface water and groundwater from source area SS10 into source area OT08. Water flowing from SS10 contains fuel from historical leaks and releases. Surface and subsurface soils at OT08 contain levels of polychlorinated biphenyls (PCBs) above the risk-based screening criteria. By diverting water flow around OT08 the amount of PCBs transported by erosion is reduced. In addition, the IRA was designed to dewater source area OT08 to simplify potential future PCB remediation.

The project involved excavating a diversion ditch along the west and north sides of OT08 to catch surface water and groundwater flowing down from the top of the mountain and source area SS10 and to divert the water around source area OT08. PCB results from 1994 were used to select a ditch location that would avoid PCB-contaminated soils. The ditch was lined with an impermeable and weatherproof material and backfilled. Descriptions of ditch construction, including as-built drawings, sampling activities, and analytical results, are presented in Sections 2.0 and 3.0.

1.2 Treatability Study - Investigation-Derived Waste Management

Treatability studies at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites may be performed to achieve several different goals and may be undertaken during various stages of the process. At Indian Mountain LRRS, a treatability study was initiated to determine if a passive biotreatment process would reduce petroleum contamination levels in soil cuttings generated during site investigations. Such material is often referred to as investigation-derived waste (IDW). A containment cell designed for passive biotreatment of fuel-contaminated IDW was constructed during August 1995. The soils were generated during borehole drilling activities in 1994 and were characterized using petroleum hydrocarbon test kit and laboratory analyses. Laboratory analytes included fuel and fuel-related compounds, and metals. A detailed evaluation of IDW contamination was completed to determine soils disposition (Jacobs Engineering Group Inc. [Jacobs] 1995). The risk-based screening criteria compiled for the RI/FS risk evaluation were also used for IDW characterization. The contaminants expected to be biodegraded are organic compounds commonly found in diesel fuel and gasoline. Cell construction and sampling activities performed after cell completion are described below.

2.0 CONSTRUCTION ACTIVITIES

The following sections describe construction of a ditch to divert the flow of fuel-contaminated water from IRP source area SS10 into adjacent IRP source area OT08, and a biotreatment containment cell for IDW soils.

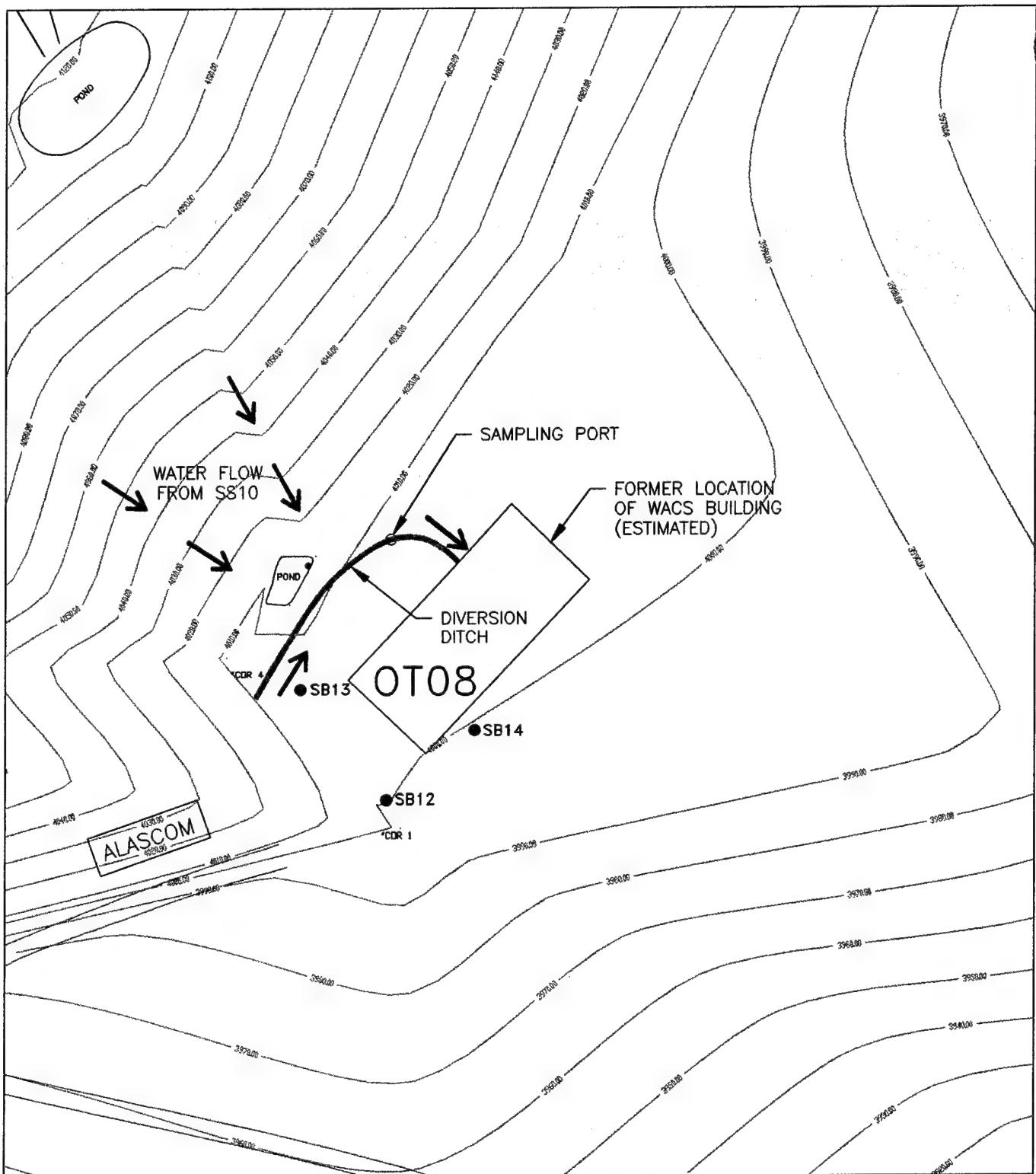
2.1 Diversion Ditch Construction

The ditch was constructed as described in the Work Plan and SAP Addendum (Air Force 1995a). Station personnel determined that the excavation area was clear of utility lines. Station records and maps were reviewed to clear the area. A backhoe was used to excavate the ditch around the western and northern edges of source area OT08. The ditch is 199 feet long (Figure 2.1-1). The ditch was planned, using map information, to be 300 to 500 feet long. Field observations made before ditch excavation, including the utility clearance, resulted in changing the location and length of the ditch. These changes should not compromise the original objective of water diversion around source area OT08.

The ditch was excavated in short segments starting at the western end of the ditch. After excavating each section, a liner consisting of 30-mil high-density polyethylene (HDPE) (specifically XR-5) was lowered into the bottom of the ditch, and the ditch was backfilled with excavated soil. All removed soil material was left onsite. Most of the soil was used to backfill the trench. The remainder was used to construct the berm on the downgradient side of the ditch or was spread around the excavation area. An extension of the liner was draped up the downgradient side of the ditch and over backfilled material within the ditch and anchored with soil (Figure 2.1-2). Several small, unlined excavations were made at the eastern terminus of the ditch to allow water flow into subsurface soil.

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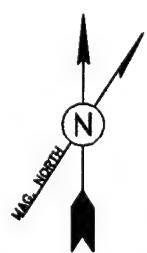
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● GEOTECHNICAL SAMPLE LOCATION

→ DIRECTION OF DIVERTED GROUNDWATER AND SURFACE WATER FLOW

CONTOUR INTERVAL = 10'



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SCALE IN FEET

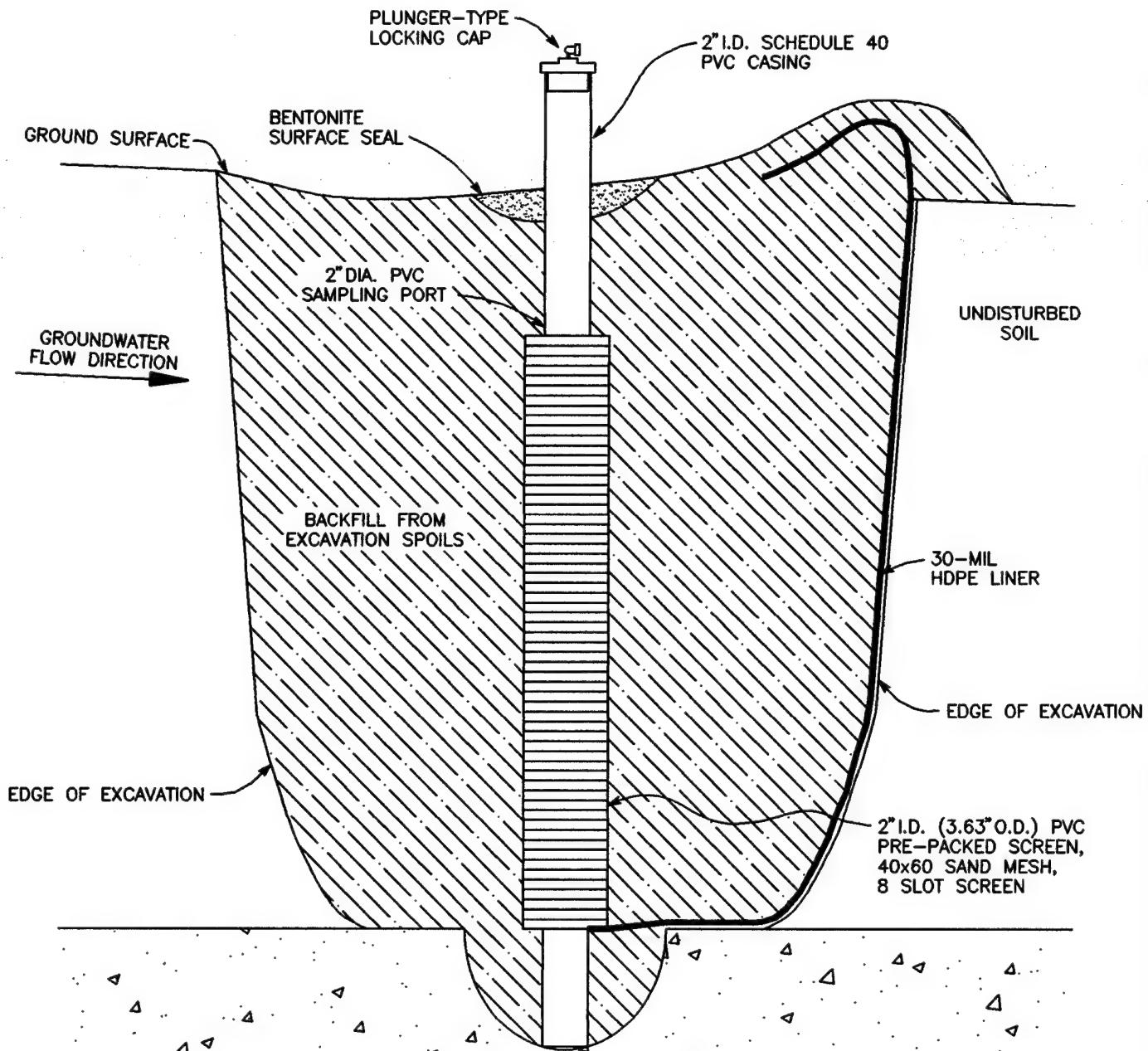
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INDIAN MOUNTAIN LONG RANGE RADAR STATION

AS-BUILT OF DIVERSION DITCH
PLAN VIEW OT08

| | | |
|------------------------|-------------------------|---------------------|
| PROJ. MGR. S. BROWN | ACAD FILE NO. 2_1-1 | FIGURE NO. 2.1-1 |
| DRAWN BY J. HUNTER | PROJ. NO. 05-G-46200 | DATE 10/12/95 |



Observations and soil sampling results suggest that subsurface soil along all but the last 25 feet of the ditch path is contaminated with diesel fuel. Soil sampling is described in Section 3.0. The average depth of the ditch is 4.73 feet below ground surface (bgs). The maximum and minimum depths are 5.91 and 3.56 feet bgs, respectively. The depth of excavation was dependent on the presence of permafrost. Permafrost was encountered throughout the length of the ditch. The presence of permafrost controlled the maximum depth of the ditch because the backhoe was not capable of excavating in frozen ground. Water was encountered in the ditch excavation from the upgradient end until the ditch curved to the southeast, about 100 feet from the beginning of the excavation (Figure 2.1-1). Depth to water varied from water flowing across the ground surface to approximately 2.5 feet bgs. Subsurface material consisted of disturbed soil and rocks or fill from demolition of the former WACS facility. The material ranged from silt to boulders in size. Conditions observed during ditch excavation were similar to those seen during test pit excavation and sampling for source area OT08. The OT08 sampling effort is described in the RI/FS Report Addendum (Air Force 1995b). The test pit field forms have been included in this report as Appendix A to provide greater detail about subsurface conditions in the vicinity of the ditch. OT08 test pit samples were also analyzed for several geotechnical parameters including the following: cation-exchange capacity, clay percent, percent moisture, permeability, particle size analysis/distribution, total organic carbon, and bulk density. The geotechnical sample results are considered representative of soil conditions within the ditch because the test pit locations are near the ditch (Figure 2.1-1) and similar, fill-type material was observed. The geotechnical results have been summarized in Table 2.1-1.

A prefabricated well (sampling port) was installed in a sump about two-thirds down the length of the ditch (Figure 2.1-1). The well consisted of a Johnson Wheelabrator V-pack screen 5 feet long and was constructed of Schedule 40 Johnson polyvinyl

TABLE 2.1-1
Geotechnical Results
OT08 - Diversion Ditch
Indian Mountain Long Range Radar Station

| Sample Identification | Test Method | Analyte | Value | Mean Value * | Units | Detection Limit |
|-----------------------|-------------|--------------------------|---------|--------------|----------|-----------------|
| SO-OT08-SB12 | SW9081 | CATION-EXCHANGE CAPACITY | 32.00 | 32.33 | MEQ/100G | 5.0000 |
| SO-OT08-SB12 | SWD422 | CLAY PERCENT | 4.00 | 4.33 | % | |
| SO-OT08-SB12 | D2216 | PERCENT MOISTURE | 7.70 | 16.56 | % | 0.0000 |
| SO-OT08-SB12 | SWD5084 | PERMEABILITY | 3.4E-06 | 4.1E-06 | CM/SEC | |
| SO-OT08-SB12 | SWD422 | SAND PERCENT | 9.00 | 11.66 | % | |
| SO-OT08-SB12 | SWD422 | SILT PERCENT | 13.00 | 19.33 | % | |
| SO-OT08-SB12 | D2487 | SOIL CLASSIFICATION | BSG | N/A | N/A | N/A |
| SO-OT08-SB12 | D854 | SPECIFIC GRAVITY | 2.75 | 2.72 | MG/KG | 0.0000 |
| SO-OT08-SB12 | SW9060 | TOTAL ORGANIC CARBON | 480.00 | 476.66 | MG/KG | 22.0000 |
| SO-OT08-SB13 | SW9081 | CATION-EXCHANGE CAPACITY | 30.00 | 32.33 | MEQ/100G | 5.0000 |
| SO-OT08-SB13 | SWD422 | CLAY PERCENT | 4.00 | 4.33 | % | |
| SO-OT08-SB13 | D2216 | PERCENT MOISTURE | 26.00 | 16.56 | % | 0.0000 |
| SO-OT08-SB13 | SWD5084 | PERMEABILITY | 7.3E-07 | 4.1E-06 | CM/SEC | |
| SO-OT08-SB13 | SWD422 | SAND PERCENT | 11.00 | 11.66 | % | |
| SO-OT08-SB13 | SWD422 | SILT PERCENT | 14.00 | 19.33 | % | |
| SO-OT08-SB13 | D2487 | SOIL CLASSIFICATION | BSG/S | N/A | N/A | N/A |
| SO-OT08-SB13 | D854 | SPECIFIC GRAVITY | 2.72 | 2.72 | MG/KG | 0.0000 |
| SO-OT08-SB13 | SW9060 | TOTAL ORGANIC CARBON | 500.00 | 476.66 | MG/KG | 27.0000 |
| SO-OT08-SB14 | SW9081 | CATION-EXCHANGE CAPACITY | 35.00 | 32.33 | MEQ/100G | 5.0000 |
| SO-OT08-SB14 | SWD422 | CLAY PERCENT | 5.00 | 4.33 | % | |
| SO-OT08-SB14 | D2216 | PERCENT MOISTURE | 16.00 | 16.56 | % | 0.0000 |
| SO-OT08-SB14 | SWD5084 | PERMEABILITY | NA | 4.1E-06 | CM/SEC | |
| SO-OT08-SB14 | SWD422 | SAND PERCENT | 15.00 | 11.66 | % | |
| SO-OT08-SB14 | SWD422 | SILT PERCENT | 31.00 | 19.33 | % | |
| SO-OT08-SB14 | D2487 | SOIL CLASSIFICATION | BSS/G | N/A | N/A | N/A |
| SO-OT08-SB14 | D854 | SPECIFIC GRAVITY | 2.70 | 2.72 | MG/KG | 0.0000 |
| SO-OT08-SB14 | SW9060 | TOTAL ORGANIC CARBON | 450.00 | 476.66 | MG/KG | 10.0000 |

Notes:

* = mean concentration of all samples

BSG = brown silty gravel

BSG/S = brown silty gravel with sand

BSS/G = brown silty sand with gravel

CM/SEC = centimeters per second

N/A = not applicable

MEQ/100G = milliequivalent weights per 100 grams

MG/KG = milligrams per kilogram

% = percent

Final

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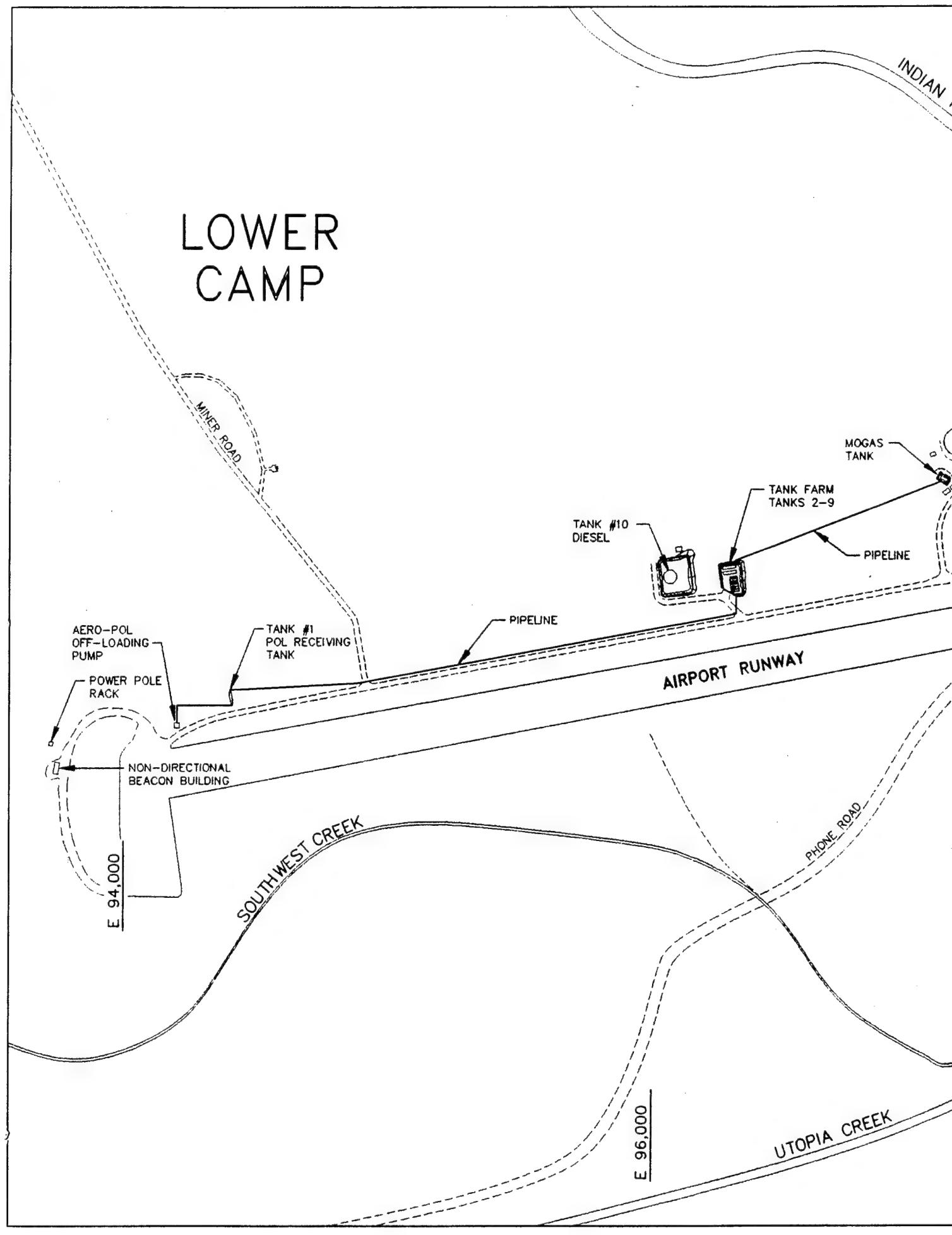
chloride. Specifications for the well were included as an appendix to the Work Plan and SAP Addendum (Air Force 1995a). The well was fitted with a locking well cap and locked. The liner material does not extend underneath the well, but the edge of the liner is against the downgradient side of the well (Figure 2.1-2).

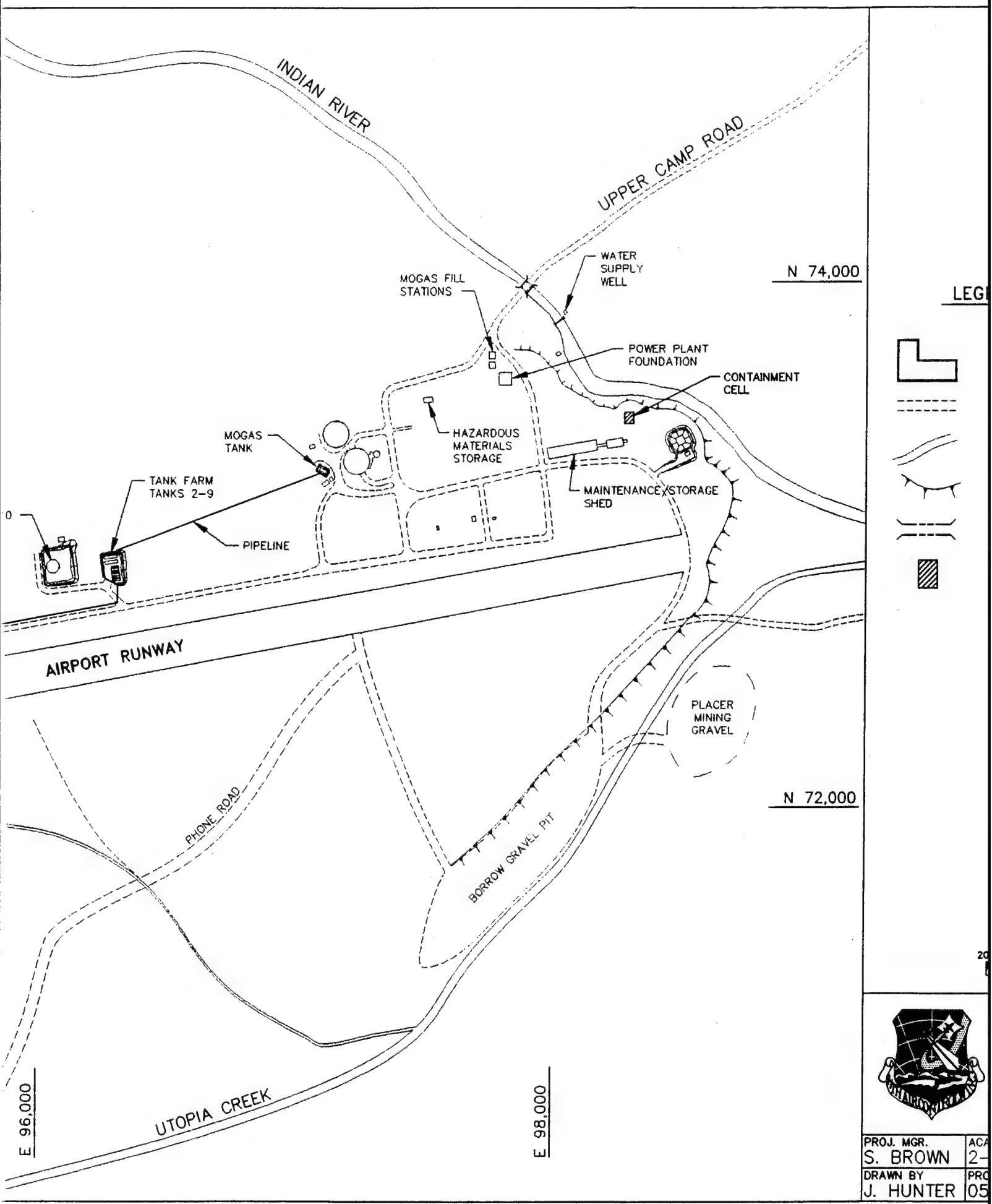
2.2 Containment Cell Construction

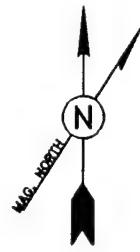
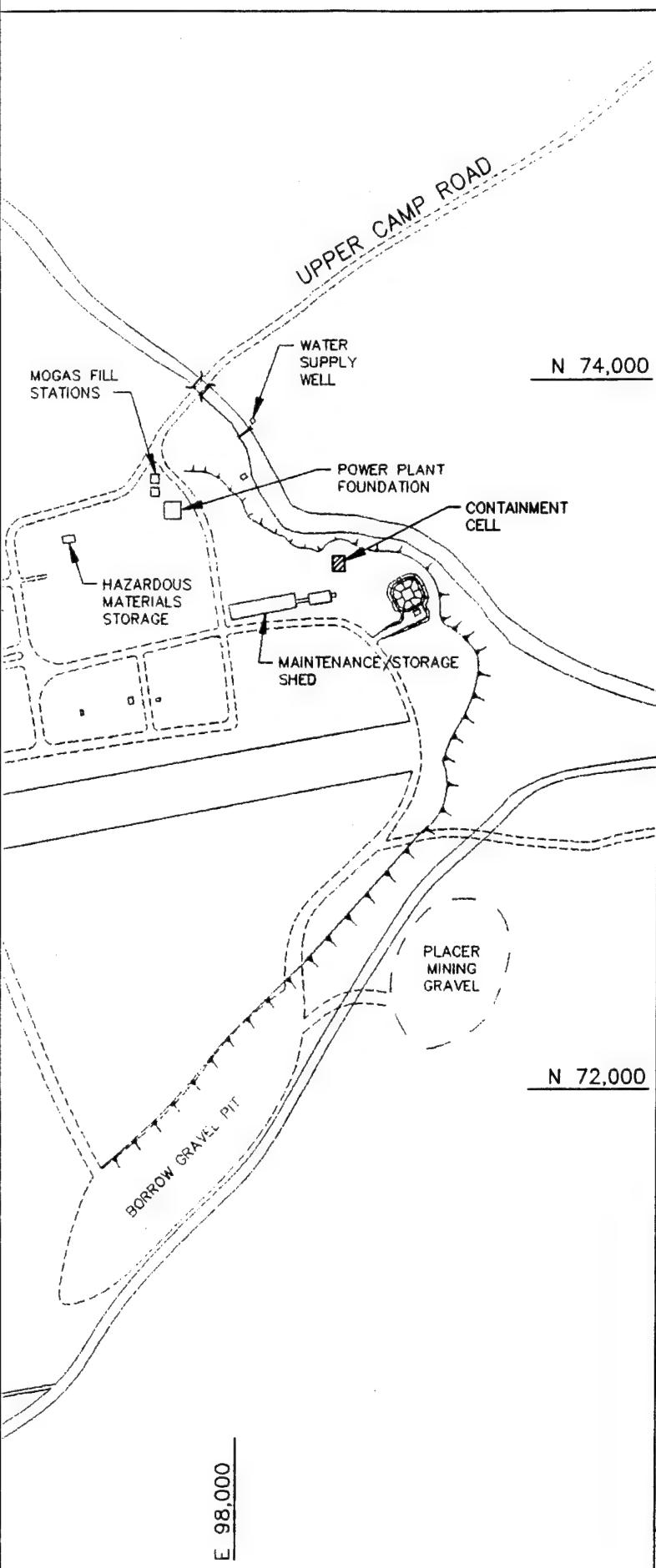
Three potential cell locations were presented in the Work Plan and SAP Addendum (Air Force 1995a). The proposed Location No. 1 was selected and station personnel approved the area (Figure 2.2-1). The area was leveled with the backhoe and nearby soil and gravel were moved in to construct the cell berms. The XR-5 high-density polyethylene (HDPE) liner material was draped across the cell and berms. Ten of the 11 drums identified in the Work Plan and SAP Addendum (Air Force 1995a) were emptied into the containment cell. Drum 33 was not a soils drum but contained mixed liquid waste from 1994 test kit analyses; therefore, it was not added to the containment cell. Based on rapid turnaround laboratory results for volatile organic compounds (VOC) and metals analysis for the two drums (26 and 32) containing sediment from the 1994 decontamination area, these soils were also added to the containment cell. If the sediment contained elevated VOC and metals concentrations would have been held pending the TCLP results and disposition determined based on those data.

The soils to be treated were spread out across the cell and mixed slightly using a shovel. Several of the drums were not completely full, so the final volume of soil placed in the cell was approximately 2 cubic yards. The volume estimate used for the original cell design was 5 cubic yards. The dimensions of the cell, sump, and ventilation system were scaled down to accommodate the decreased soil volume.

LOWER CAMP

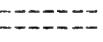
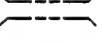






MAGNETIC DECLINATION : 24° 42'
ANNUAL RATE OF CHANGE : 4.1°
U.S.G.S. EPOCH 1985

LEGEND

-  BUILDINGS
-  GRAVEL ROADS
-  RIVER, STREAM, OR CREEK
-  ESCARPMENT
-  CULVERT
-  CONTAINMENT CELL

200 0 200 400



INDIAN MOUNTAIN
LONG RANGE RADAR STATION
CONTAINMENT CELL
LOCATION

| | | |
|------------------------|-------------------------|---------------------|
| PROJ. MGR. S. BROWN | ACAD FILE NO. 2-1 | FIGURE NO. 2.2-1 |
| DRAWN BY J. HUNTER | PROJ. NO. 05-G-46200 | DATE 10/13/95 |

Figures 2.2-2 and 2.2-3 depict the final construction details of the cell. As mentioned in the Work Plan and SAP Addendum (Air Force 1995a), those drums containing uncontaminated soils were emptied at the active station landfill. All drums were decontaminated and staged adjacent to the containment cell. Decontamination water was filtered using a carbon water conditioning unit and discharged into the station sewage treatment pond. Drum 33, containing liquid waste, and the used carbon filter drum were put on pallets inside the maintenance shed.

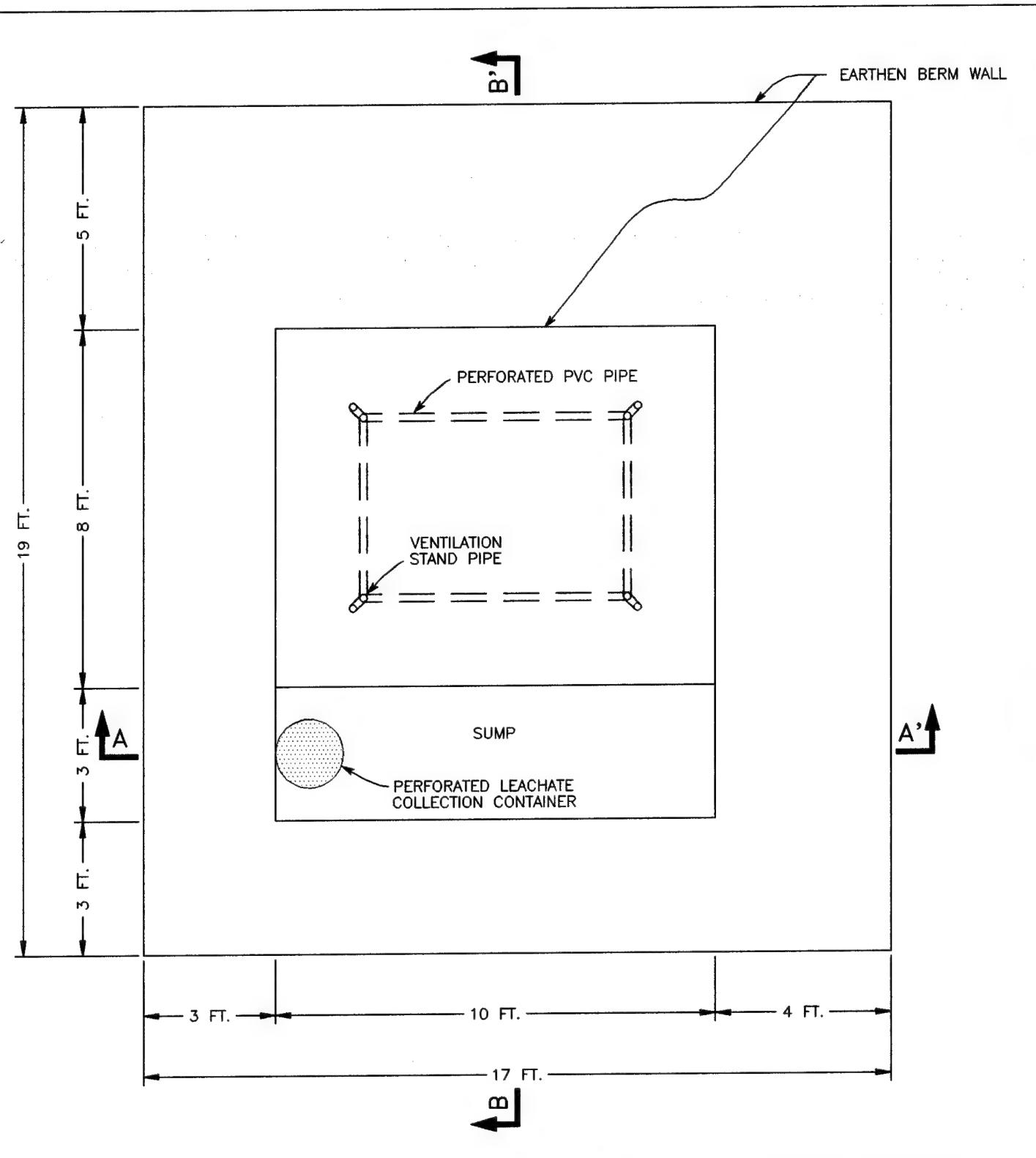
3.0 SAMPLING, ANALYSIS AND DATA EVALUATION

The following sections describe sampling and analysis performed during and after construction of the diversion ditch at OT08 and the containment cell at Lower Camp. Field test kit samples and samples collected for analytical laboratory analyses are described. Sample results are also presented. When appropriate, an evaluation of the results is provided.

3.1 Diversion Ditch

Immunoassay test kits designed for PCBs (U.S. Environmental Protection Agency [EPA] Method 4020) were used to ensure that PCB-contaminated soils were not present in soils where the ditch was excavated. Four samples collected from excavated soils were analyzed and no PCBs were detected. Test kit detection levels were 1, 10, and 40 parts per million (ppm).

Four petroleum hydrocarbon test kit samples (EPA Method 4030) were analyzed to estimate the presence and concentration of contamination in ditch soils. Four samples were analyzed, and all four samples contained petroleum fuels above the maximum detection level. Test kit sensitivities at the maximum detection level correspond to gasoline range organic compounds (GRO) at concentrations greater than 200 ppm and



NOTE:
FOR CROSS SECTIONS, SEE
FIGURE NUMBER 2.2-3.

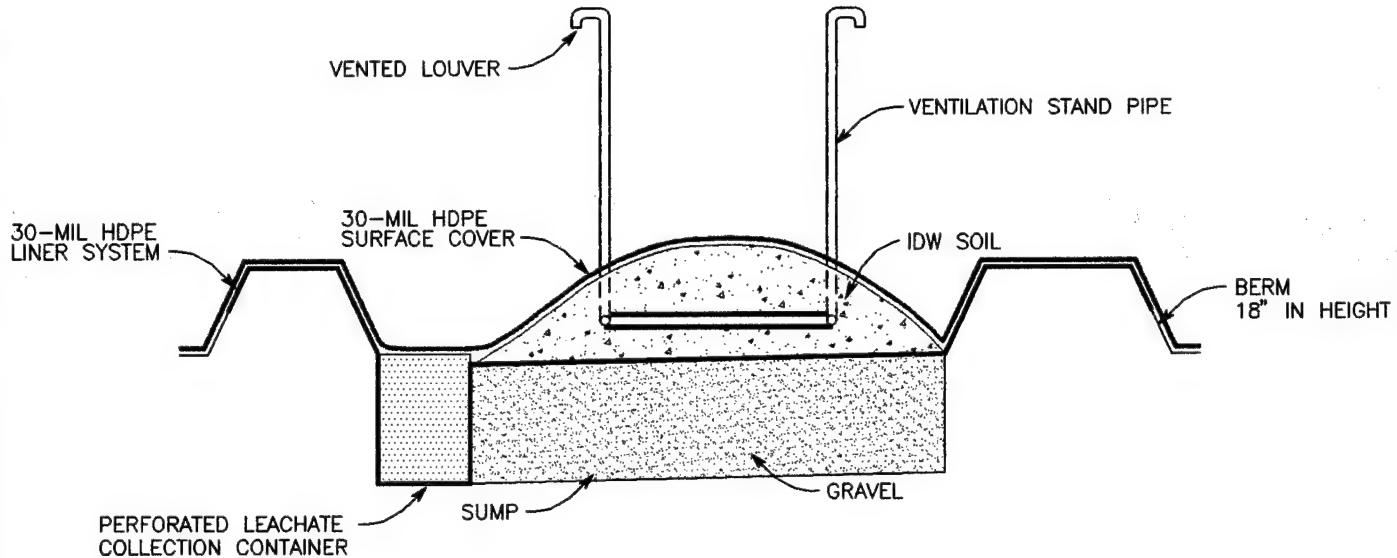
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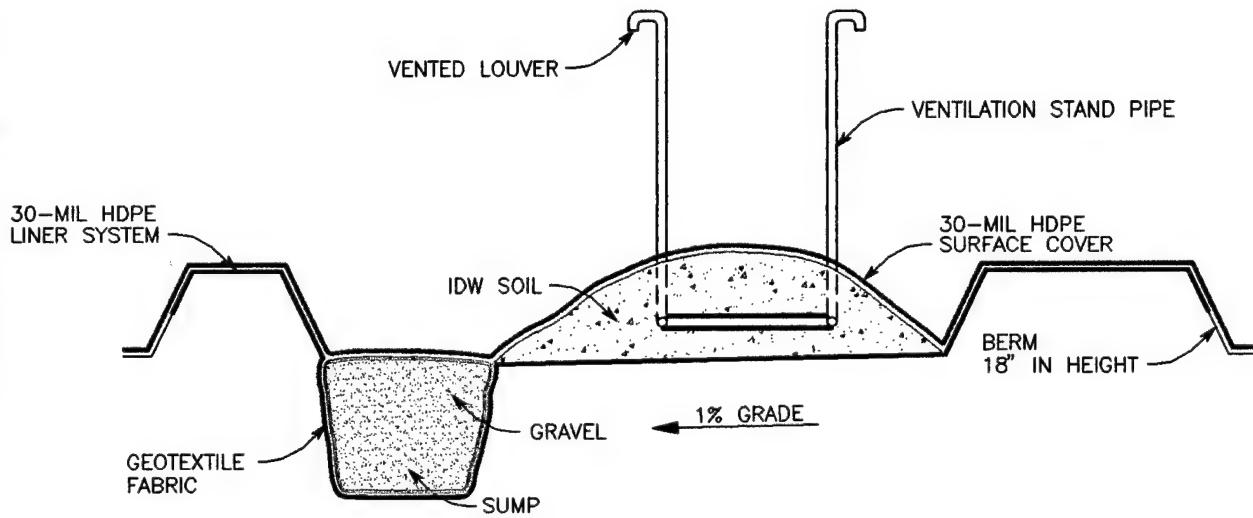
INDIAN MOUNTAIN
LONG RANGE RADAR STATION

AS-BUILT OF
CONTAINMENT CELL
PLAN VIEW

| | | |
|------------------------|-------------------------|---------------------|
| PROJ. MGR. S. BROWN | ACAD FILE NO. 3_1-2 | FIGURE NO. 2.2-2 |
| DRAWN BY J. HUNTER | PROJ. NO. 05-G-46200 | DATE 10/13/95 |



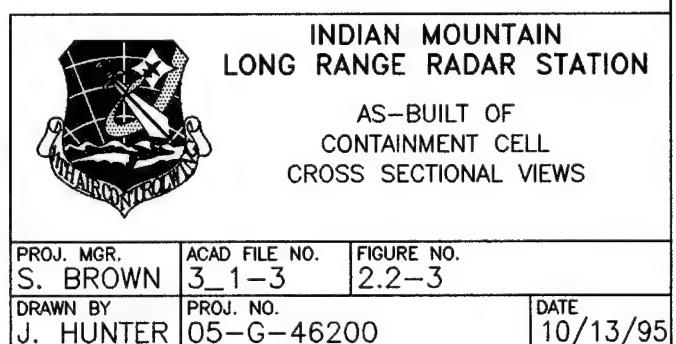
SECTION A-A'



SECTION B-B'

NOTE:
FOR PLAN VIEW, SEE
FIGURE NUMBER 2.2-2.

0 1 2 3 4 5
SCALE IN FEET



greater than 300 ppm diesel range organic compounds (DRO). Specifications for the test kits were included in the Work Plan and SAP Addendum (Air Force 1995a).

Groundwater was collected from the well one day after the ditch was completed. The well was not purged before sampling because the volume of water in the well was small and recovery slow. Samples were submitted to the laboratory for VOC, semivolatile organic compound (SVOC), GRO, and DRO analyses.

GRO and DRO, measured using Methods AK101 and AK102, were detected in the ditch water collected from the well at 2.6 and 6.7 milligrams per liter (mg/L), respectively. Fluorene and bis(2-ethylhexyl) phthalate concentrations were estimated by the laboratory at 4.0 and 5.4 micrograms per liter ($\mu\text{g/L}$), respectively. No other compounds were detected in the ditch water sample. Table 3.1-1 includes a complete list of analyses and results. The difference between soil and water concentrations of DRO and GRO suggests that fuel contamination is bound to soil particles and is not readily dissolved and transported by water.

Geotechnical results from samples collected for source area OT08 characterization were presented in Table 2.1-1. Figure 2.1-1 shows the relative location of the test pits and diversion ditch.

3.2 Containment Cell

Sampling of the containment cell soils and two IDW drums was completed as proposed in the Work Plan and SAP Addendum (Air Force 1995a). Laboratory samples were collected from the drums using a stainless steel hand auger. Immunoassay test kit samples and laboratory samples were collected from the containment cell soils using the hand auger and a stainless steel spoon.

TABLE 3.1-1
Laboratory Analytical Results Diversions Ditch
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier |
|--------|-----------------------|-------------|----------------------------|-------|-------|-----------------|---------------|
| WG | WG-SS10-DD01 | SW8260 | 1,1,1,2-TETRACHLOROETHANE | 0.00 | µg/L | 0.2000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,1,1-TRICHLOROETHANE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,1,2,2-TETRACHLOROETHANE | 0.00 | µg/L | 0.4000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,1,2-TRICHLOROETHANE | 0.00 | µg/L | 0.4000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,1-DICHLOROETHANE | 0.00 | µg/L | 0.2000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,1-DICHLOROETHENE | 0.00 | µg/L | 0.4000 | U |
| WG | WG-SS10-DD01 | SW8270 | 1,2,4-TRICHLOROBENZENE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,2-DICHLOROBENZENE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8270 | 1,2-DICHLOROETHENE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,2-DICHLOROBENZENE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,2-DICHLOROPROpane | 0.00 | µg/L | 0.4000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,3-DICHLOROBENZENE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8270 | 1,3-DICHLOROBENZENE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1,4-DICHLOROBENZENE | 0.00 | µg/L | 0.2000 | U |
| WG | WG-SS10-DD01 | SW8270 | 1,4-DICHLOROBENZENE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | 1-CHLOROHEXANE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2,4,5-TRICHLOROPHENOL | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2,4,6-TRICHLOROPHENOL | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2,4-DICHLOROPHENOL | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2,4-DIMETHYLPHENOL | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2,4-DINITROPHENOL | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2,4-DINITROTOLUENE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2,6-DINITROTOLUENE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2-CHLORONAPHTHALENE | 0.00 | µg/L | 6.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2-CHLOROPHENOL | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2-METHYLNAPHTHALENE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2-METHYLPHENOL (o-CRESOL) | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2-NITROANILINE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 2-NITROPHENOL | 0.00 | µg/L | 5.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 3,3'-DICHLOROBENZIDINE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 3-NITROANILINE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 4,6-DINITRO-2-METHYLPHENOL | 0.00 | µg/L | 5.0000 | U |

TABLE 3.1-1
Laboratory Analytical Results Diversion Ditch
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier |
|--------|-----------------------|-------------|--|-------|-------|-----------------|---------------|
| WG | WG-SS10-DD01 | SW8270 | 4-BROMOPHENYL PHENYL ETHER | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 4-CHLORO-3-METHYLPHENOL | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 4-CHLOROANILINE | 0.00 | µg/L | 5.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 4-CHLOROPHENYL PHENYL ETHER | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 4-METHYLPHENOL (p-CRESOL) | 0.00 | µg/L | 7.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 4-NITROANILINE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | 4-NITROPHENOL | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | ACENAPHTHENE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | ACENAPHTHYLENE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | ANTHRACENE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | BENZENE | 0.00 | µg/L | 0.2000 | U |
| WG | WG-SS10-DD01 | SW8270 | BENZO(a)ANTHRACENE | 0.00 | µg/L | 2.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | BENZO(a)PYRENE | 0.00 | µg/L | 2.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | BENZO(b)FLUORANTHENE | 0.00 | µg/L | 2.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | BENZO(g,h,i)PERYLENE | 0.00 | µg/L | 2.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | BENZO(k)FLUORANTHENE | 0.00 | µg/L | 2.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | BENZOIC ACID | 0.00 | µg/L | 30.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | BENZYL ALCOHOL | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | BENZYL BUTYL PHTHALATE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | bis(2-CHLOROETHOXY) METHANE | 0.00 | µg/L | 5.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | bis(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER) | 0.00 | µg/L | 5.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | bis(2-CHLOROISOPROPYL) ETHER | 0.00 | µg/L | 5.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | bis(2-ETHYLHEXYL) PHTHALATE | 5.40 | µg/L | 3.0000 | J |
| WG | WG-SS10-DD01 | SW8260 | BROMOBENZENE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8260 | BROMODICHLOROMETHANE | 0.00 | µg/L | 0.4000 | U |
| WG | WG-SS10-DD01 | SW8260 | BROMOFORM | 0.00 | µg/L | 0.4000 | U |
| WG | WG-SS10-DD01 | SW8260 | BROMOMETHANE | 0.00 | µg/L | 0.2000 | U |
| WG | WG-SS10-DD01 | SW8260 | CARBON TETRACHLORIDE | 0.00 | µg/L | 0.4000 | U |
| WG | WG-SS10-DD01 | SW8260 | CHLOROBENZENE | 0.00 | µg/L | 0.2000 | U |
| WG | WG-SS10-DD01 | SW8260 | CHLOROETHANE | 0.00 | µg/L | 0.5000 | U |
| WG | WG-SS10-DD01 | SW8260 | CHLOROFORM | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8260 | CHLOROMETHANE | 0.00 | µg/L | 0.4000 | U |

TABLE 3.1-1
Laboratory Analytical Results Diversion Ditch
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier |
|--------|-----------------------|-------------|----------------------------------|---------|-------|-----------------|---------------|
| WG | WG-SS10-DD01 | SW8270 | CHRYSENE | 0.00 | µg/L | 2.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | cis-1,2-DICHLOROETHYLENE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8270 | DI-n-BUTYL PHTHALATE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | Di-n-OCTYLPHthalate | 0.00 | µg/L | 2.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | DIBENZ(a,h)ANTHRACENE | 0.00 | µg/L | 2.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | DIBENZOFURAN | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | DIBROMOCHLOROMETHANE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8260 | DIBROMOMETHANE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | AK102 | DIESEL RANGE ORGANIC COMPOUNDS | 6.70 | mg/L | 0.2000 | J |
| WG | WG-SS10-DD01 | SW8270 | DIETHYL PHTHALATE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | DIMETHYL PHTHALATE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | ETHYL BENZENE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8270 | FLUORANTHENE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | FLUORINE | 4.00 | µg/L | 3.0000 | J |
| WG | WG-SS10-DD01 | AK101 | GASOLINE RANGE ORGANIC COMPOUNDS | 2600.00 | µg/L | 70.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | HEXACHLOROBENZENE | 0.00 | µg/L | 2.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | HEXACHLOROBUTADIENE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | HEXACHLOROCYCLOPENTADIENE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | HEXACHLOROETHANE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | INDENO (1,2,3-c,d) PYRENE | 0.00 | µg/L | 4.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | ISOPHORONE | 0.00 | µg/L | 5.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | METHYLENE CHLORIDE | 0.00 | µg/L | 0.4000 | U |
| WG | WG-SS10-DD01 | SW8270 | N-NITROSDI-n-PROPYLAMINE | 0.00 | µg/L | 5.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | N-NITROSDIPHENYLAMINE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | NAPHTHALENE | 0.00 | µg/L | 5.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | NITROBENZENE | 0.00 | µg/L | 5.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | PENTACHLOROPHENOL | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | PHENANTHRENE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | PHENOL | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8270 | PYRENE | 0.00 | µg/L | 3.0000 | U |
| WG | WG-SS10-DD01 | SW8260 | STYRENE | 0.00 | µg/L | 0.5000 | U |
| WG | WG-SS10-DD01 | SW8260 | TETRACHLOROETHYLENE (PCE) | 0.00 | µg/L | 0.5000 | U |

TABLE 3.1-1
Laboratory Analytical Results Diversion Ditch
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier |
|--------|-----------------------|-------------|--------------------------|-------|-------|-----------------|---------------|
| WG | WG-SS10-DD01 | SW8260 | TOLUENE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8260 | TOTAL XYLEMES | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8260 | trans-1,2-DICHLOROETHENE | 0.00 | µg/L | 0.3000 | U |
| WG | WG-SS10-DD01 | SW8260 | TRICHLOROETHYLENE (TCE) | 0.00 | µg/L | 0.5000 | U |
| WG | WG-SS10-DD01 | SW8260 | TRICHLOROFLUOROMETHANE | 0.00 | µg/L | 0.4000 | U |
| WG | WG-SS10-DD01 | SW8260 | VINYL CHLORIDE | 0.00 | µg/L | 0.1000 | U |

Notes:

MG/L = milligrams per liter
 µg/L = micrograms per liter

J = Estimated
 SS = Surface soil
 U = Undetected (analyzed for but undetected)
 WG = Groundwater

Composite samples were collected from the decontamination area sediment drums filled in 1994 (Drums 26 and 32). The samples were submitted to the laboratory for rapid turnaround analysis of VOC and metals concentrations. These data were required to decide whether the sediment could be placed in the containment cell. These samples were also analyzed according to the Toxicity Characteristic Leaching Procedure (TCLP) with a normal turnaround time for results. The VOC and metals results were nondetections or below human health and ecological risk levels for most analytes and are included in Table 3.2-1. The TCLP results are also included in this table and are denoted by a "WL" matrix code and "TCLP" following the test method. The IDW samples from Drums 26 and 32 were designated SO-IDW-DR26 and SO-IDW-DR32.

Petroleum hydrocarbon test kit samples and laboratory samples were collected to characterize the soils in the cell. The samples were collected five days after soils were put in the cell and covered. Soil was collected from throughout the cell and homogenized. Four composite soil samples were analyzed using the petroleum hydrocarbon immunoassay test kits (EPA Method 4030). All four samples contained petroleum fuels above the maximum detection level. Test kit sensitivities at the maximum detection level correspond to GRO at concentrations greater than 200 ppm and greater than 300 ppm DRO. Specifications for the test kits were included in the Work Plan and SAP Addendum (Air Force 1995a). Three composite samples were sent to the laboratory for GRO and DRO analysis. These samples were designated SO-CC01-CS01 through -CS03. Three additional samples were collected from areas of obvious fuel contamination and analyzed for a suite of nutrient indicators. These analytes include the following: total Kjeldahl nitrogen, total phosphorus, alkalinity, total iron, and percent moisture. The nutrient sample numbers are SO-CC01-CS04 through -CS06. All laboratory results are summarized in Table 3.2-1. Mean concentrations of analytes are summarized in Table 3.2-2.

TABLE 3.2-1
Laboratory Analytical Results Containment Cell and Investigation-Derived Waste Drums
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier | Human Health Risk | Ecological Risk |
|--------|-----------------------|-------------|---|----------|-------|-----------------|---------------|-------------------|-----------------|
| SS | SO-CC01-CS01 | AK102 | DIESEL RANGE ORGANIC COMPOUNDS | 36.00 | MG/KG | 0.9000 | | | |
| SS | SO-CC01-CS01 | AK101 | GASOLINE RANGE ORGANIC COMPOUNDS | 0.31 | MG/KG | 0.0800 | J | | |
| SS | SO-CC01-CS02 | AK102 | DIESEL RANGE ORGANIC COMPOUNDS | 50.00 | MG/KG | 0.9000 | | | |
| SS | SO-CC01-CS02 | AK101 | GASOLINE RANGE ORGANIC COMPOUNDS | 0.55 | MG/KG | 0.0800 | J | | |
| SS | SO-CC01-CS03 | AK102 | DIESEL RANGE ORGANIC COMPOUNDS | 35.00 | MG/KG | 1.0000 | | | |
| SS | SO-CC01-CS03 | AK101 | GASOLINE RANGE ORGANIC COMPOUNDS | 1.70 | MG/KG | 0.0800 | | | |
| SS | SO-CC01-CS04 | E310.1 | ALKALINITY, BICARBONATE (AS CaCO ₃) | 1300.00 | MG/L | 40.0000 | | | |
| SS | SO-CC01-CS04 | E310.1 | ALKALINITY, CARBONATE (AS CaCO ₃) | 0.00 | MG/L | 40.0000 | U | | |
| SS | SO-CC01-CS04 | E310.1 | ALKALINITY, HYDROXIDE (AS CaCO ₃) | 0.00 | MG/L | 40.0000 | U | | |
| SS | SO-CC01-CS04 | E310.1 | ALKALINITY, TOTAL (AS CaCO ₃) | 1300.00 | MG/L | 40.0000 | | | |
| SS | SO-CC01-CS04 | SW7380 | IRON | 36000.00 | MG/KG | 6.00000 | | | |
| SS | SO-CC01-CS04 | E351.2 | NITROGEN, KIELDAHL, TOTAL | 630.00 | MG/KG | 20.0000 | | | |
| SS | SO-CC01-CS04 | D2216 | PERCENT MOISTURE | 16.00 | % | | | | |
| SS | SO-CC01-CS04 | 365.4 | PHOSPHORUS (AS P) | 360.00 | MG/KG | | | | |
| SS | SO-CC01-CS04 | 365.4 | TOTAL PHOSPHORUS (AS PO ₄) | 1090.00 | MG/KG | | | | |
| SS | SO-CC01-CS05 | E310.1 | ALKALINITY, BICARBONATE (AS CaCO ₃) | 410.00 | MG/L | 40.0000 | | | |
| SS | SO-CC01-CS05 | E310.1 | ALKALINITY, CARBONATE (AS CaCO ₃) | 0.00 | MG/L | 40.0000 | U | | |
| SS | SO-CC01-CS05 | E310.1 | ALKALINITY, HYDROXIDE (AS CaCO ₃) | 0.00 | MG/L | 40.0000 | U | | |
| SS | SO-CC01-CS05 | E310.1 | ALKALINITY, TOTAL (AS CaCO ₃) | 410.00 | MG/L | 40.0000 | | | |
| SS | SO-CC01-CS05 | SW7380 | IRON | 38000.00 | MG/KG | 7.00000 | | | |
| SS | SO-CC01-CS05 | E351.2 | NITROGEN, KIELDAHL, TOTAL | 380.00 | MG/KG | 20.0000 | | | |
| SS | SO-CC01-CS05 | D2216 | PERCENT MOISTURE | 27.00 | % | | | | |
| SS | SO-CC01-CS05 | 365.4 | PHOSPHORUS (AS P) | 420.00 | MG/KG | | | | |
| SS | SO-CC01-CS05 | 365.4 | TOTAL PHOSPHORUS (AS PO ₄) | 1300.00 | MG/KG | | | | |
| SS | SO-CC01-CS06 | E310.1 | ALKALINITY, BICARBONATE (AS CaCO ₃) | 260.00 | MG/L | 40.0000 | | | |
| SS | SO-CC01-CS06 | E310.1 | ALKALINITY, CARBONATE (AS CaCO ₃) | 0.00 | MG/L | 40.0000 | U | | |
| SS | SO-CC01-CS06 | E310.1 | ALKALINITY, HYDROXIDE (AS CaCO ₃) | 0.00 | MG/L | 40.0000 | U | | |
| SS | SO-CC01-CS06 | E310.1 | ALKALINITY, TOTAL (AS CaCO ₃) | 260.00 | MG/L | 40.0000 | | | |
| SS | SO-CC01-CS06 | SW7380 | IRON | 36000.00 | MG/KG | 6.00000 | | | |
| SS | SO-CC01-CS06 | E351.2 | NITROGEN, KIELDAHL, TOTAL | 290.00 | MG/KG | 20.0000 | | | |
| SS | SO-CC01-CS06 | D2216 | PERCENT MOISTURE | 17.00 | % | | | | |
| SS | SO-CC01-CS06 | 365.4 | PHOSPHORUS (AS P) | 360.00 | MG/KG | | | | |
| SS | SO-CC01-CS06 | 365.4 | TOTAL PHOSPHORUS (AS PO ₄) | 1100.00 | MG/KG | | | | |
| SS | SO-IDW-DR26 | SW8240 | 1,1,1-TRICHLOROETHANE | 0.00 | MG/KG | 0.0007 | U | | |
| SS | SO-IDW-DR26 | SW8240 | 1,1,2,2-TETRACHLOROETHANE | 0.00 | MG/KG | 0.0015 | U | | |
| SS | SO-IDW-DR26 | SW8240 | 1,1,2-TRICHLOROETHANE | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR26 | SW8240 | 1,1-DICHLOROETHANE | 0.00 | MG/KG | 0.0003 | U | | |
| SS | SO-IDW-DR26 | SW8240 | 1,1-DICHLOROETHENE | 0.00 | MG/KG | 0.0007 | U | | |

TABLE 3.2-1
Laboratory Analytical Results Containment Cell and Investigation-Derived Waste Drums
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier | Human Health Risk | Ecological Risk |
|--------|-----------------------|-------------|---|----------|-------|-----------------|---------------|-------------------|-----------------|
| SS | SO-IDW-DR26 | SW8240 | 1,2-DICHLOROETHANE | 0.00 | MG/KG | 0.0015 | U | | |
| SS | SO-IDW-DR26 | SW8240 | 1,2-DICHLOROPROpane | 0.00 | MG/KG | 0.0006 | U | | |
| SS | SO-IDW-DR26 | SW8240 | 2-CHLOROETHYL VINYL ETHER | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR26 | SW8240 | 2-HEXANONE | 0.00 | MG/KG | 0.0040 | U | | |
| SS | SO-IDW-DR26 | SW8240 | ACETONE | 0.04 | MG/KG | 0.0150 | J | | |
| SS | SO-IDW-DR26 | SW6010 | ALUMINUM | 21000.00 | MG/KG | 15.0000 | | | |
| SS | SO-IDW-DR26 | SW6010 | ANTIMONY | 0.00 | MG/KG | 8.0000 | U | | |
| SS | SO-IDW-DR26 | SW6010 | ARSENIC | 7.40 | MG/KG | 4.0000 | J | | CI |
| SS | SO-IDW-DR26 | SW6010 | BARIUM | 190.00 | MG/KG | 0.1000 | | | |
| SS | SO-IDW-DR26 | SW8240 | BENZENE | 0.00 | MG/KG | 0.0007 | J | | |
| SS | SO-IDW-DR26 | SW6010 | BERYLLIUM | 0.44 | MG/KG | 0.0300 | | | |
| SS | SO-IDW-DR26 | SW8240 | BROMODICHLOROMETHANE | 0.00 | MG/KG | 0.0003 | U | | |
| SS | SO-IDW-DR26 | SW8240 | BROMOFORM | 0.00 | MG/KG | 0.0005 | U | | |
| SS | SO-IDW-DR26 | SW8240 | BROMOMETHANE | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR26 | SW6010 | CADMIUM | 5.30 | MG/KG | 0.3000 | AB | CI | AB |
| SS | SO-IDW-DR26 | SW6010 | CALCIUM | 7900.00 | MG/KG | 3.0000 | AB | AB | AB |
| SS | SO-IDW-DR26 | SW8240 | CARBON DISULFIDE | 0.00 | MG/KG | 0.0030 | U | | |
| SS | SO-IDW-DR26 | SW8240 | CARBON TETRACHLORIDE | 0.00 | MG/KG | 0.0015 | U | | |
| SS | SO-IDW-DR26 | SW8240 | CHLOROBENZENE | 0.00 | MG/KG | 0.0005 | U | | |
| SS | SO-IDW-DR26 | SW8240 | CHLOROETHANE | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR26 | SW8240 | CHLOROFORM | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR26 | SW8240 | CHLOROMETHANE | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR26 | SW6010 | CHROMIUM, TOTAL | 34.00 | MG/KG | 0.6000 | | | |
| SS | SO-IDW-DR26 | SW8240 | cis-1,2-DICHLOROETHYLENE | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR26 | SW8240 | cis-1,3-DICHLOROPROPENE | 0.00 | MG/KG | 0.0009 | U | | |
| SS | SO-IDW-DR26 | SW6010 | COBALT | 18.00 | MG/KG | 0.6000 | | | |
| SS | SO-IDW-DR26 | SW6010 | COPPER | 53.00 | MG/KG | 0.6000 | | | |
| SS | SO-IDW-DR26 | SW8240 | DIBROMOCHLOROMETHANE | 0.00 | MG/KG | 0.0009 | U | | |
| SS | SO-IDW-DR26 | SW8240 | ETHYL BENZENE | 0.07 | MG/KG | 0.0006 | | | |
| SS | SO-IDW-DR26 | SW6010 | IRON | 38000.00 | MG/KG | 0.6000 | | | |
| SS | SO-IDW-DR26 | SW6010 | LEAD | 44.00 | MG/KG | 4.0000 | J | | AB |
| SS | SO-IDW-DR26 | SW6010 | MAGNESIUM | 9900.00 | MG/KG | 5.0000 | | | |
| SS | SO-IDW-DR26 | SW6010 | MANGANESE | 580.00 | MG/KG | 0.1000 | | | |
| SS | SO-IDW-DR26 | SW8240 | METHYL ETHYL KETONE (2-BUTANONE) | 0.02 | MG/KG | 0.0050 | J | | |
| SS | SO-IDW-DR26 | SW8240 | METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) | 0.00 | MG/KG | 0.0030 | U | | |
| SS | SO-IDW-DR26 | SW8240 | METHYLENE CHLORIDE | 0.00 | MG/KG | 0.0009 | U | | |
| SS | SO-IDW-DR26 | SW6010 | MOLYBDENUM | 0.00 | MG/KG | 0.4000 | U | | |
| SS | SO-IDW-DR26 | SW6010 | NICKEL | 9.40 | MG/KG | 3.0000 | J | | |

TABLE 3.2-1
Laboratory Analytical Results Containment Cell and Investigation-Derived Waste Drums
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier | Human Health Risk | Ecological Risk |
|--------|-----------------------|---------------|---------------------------------|--------|-------|-----------------|---------------|-------------------|-----------------|
| SS | SO-IDW-DR26 | SW6010 | POTASSIUM | 690.00 | MG/KG | 26.0000 | | | |
| SS | SO-IDW-DR26 | SW6010 | SELENIUM | 0.00 | MG/KG | 5.0000 | U | | |
| SS | SO-IDW-DR26 | SW6010 | SILVER | 0.00 | MG/KG | 1.0000 | U | | |
| SS | SO-IDW-DR26 | SW6010 | SODIUM | 360.00 | MG/KG | 6.0000 | | | |
| SS | SO-IDW-DR26 | SW8240 | STYRENE | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR26 | SW8240 | TETRACHLOROETHYLENE (PCE) | 0.00 | MG/KG | 0.0006 | U | | |
| SS | SO-IDW-DR26 | SW6010 | THALLIUM | 5.20 | MG/KG | 3.0000 | J | | |
| SS | SO-IDW-DR26 | SW8240 | TOLUENE | 0.23 | MG/KG | 0.0005 | | | |
| SS | SO-IDW-DR26 | SW8240 | TOTAL XYLENES | 0.64 | MG/KG | 0.0040 | | | |
| SS | SO-IDW-DR26 | SW8240 | trans-1,2-DICHLOROETHENE | 0.00 | MG/KG | 0.0005 | U | | |
| SS | SO-IDW-DR26 | SW8240 | trans-1,3-DICHLOROPROPENE | 0.00 | MG/KG | 0.0005 | U | | |
| SS | SO-IDW-DR26 | SW8240 | TRICHLOROETHYLENE (TCE) | 0.00 | MG/KG | 0.0006 | U | | |
| SS | SO-IDW-DR26 | SW6010 | VANADIUM | 83.00 | MG/KG | 0.6000 | | | |
| SS | SO-IDW-DR26 | SW8240 | VINYL ACETATE | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR26 | SW8240 | VINYL CHLORIDE | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR26 | SW6010 | ZINC | 99.00 | MG/KG | 0.4000 | | | |
| WL | SO-IDW-DR26-WL | SW6010 - TCLP | ARSENIC | 0.00 | µG/L | 0.0600 | U | | |
| WL | SO-IDW-DR26-WL | SW6010 - TCLP | BARIUM | 1.70 | µG/L | 0.0200 | | | |
| WL | SO-IDW-DR26-WL | SW6010 - TCLP | CADMIUM | 0.00 | µG/L | 0.0040 | U | | |
| WL | SO-IDW-DR26-WL | SW6010 - TCLP | CHROMIUM, TOTAL | 0.00 | µG/L | 0.0100 | U | | |
| WL | SO-IDW-DR26-WL | SW6010 - TCLP | LEAD | 0.00 | µG/L | 0.0600 | U | | |
| WL | SO-IDW-DR26-WL | SW6010 - TCLP | SELENIUM | 0.00 | µG/L | 0.0800 | U | | |
| WL | SO-IDW-DR26-WL | SW6010 - TCLP | SILVER | 0.00 | µG/L | 0.0200 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | 1,1-DICHLOROETHENE | 0.00 | µG/L | 0.0006 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | 1,2-DICHLOROETHANE | 0.00 | µG/L | 0.0008 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | 1,4-DICHLOROBENZENE | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | 2,4,5-TRICHLOROPHENOL | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | 2,4,6-TRICHLOROPHENOL | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | 2,4-D(DICHLOROPHOXYACETIC ACID) | 0.00 | µG/L | 0.3000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | 2,4-DINITROTOLUENE | 0.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | 2-METHYLPHENOL (o-CRESOL) | 0.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | 3-METHYLPHENOL | 0.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | 4-METHYLPHENOL (p-CRESOL) | 41.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | BENZENE | 0.00 | MG/L | 0.0006 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | CARBON TE TRACHLORIDE | 0.00 | MG/L | 0.0008 | U | | |
| WL | SO-IDW-DR26-WL | SW8080 - TCLP | CHLORDANE | 0.00 | µG/L | 0.0080 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | CHLOROBENZENE | 0.00 | MG/L | 0.0004 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | CHLOROFORM | 0.00 | MG/L | 0.0010 | J | | |

TABLE 3.2-1
Laboratory Analytical Results Containment Cell and Investigation-Derived Waste Drums
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier | Human Health Risk | Ecological Risk |
|--------|-----------------------|---------------|----------------------------------|----------|-------|-----------------|---------------|-------------------|-----------------|
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | CRESOLS, TOTAL ENDRIN | 41.00 | µG/L | 10.0000 | | | |
| WL | SO-IDW-DR26-WL | SW8080 - TCLP | GAMMA BHC (LINDANE) | 0.00 | µG/L | 0.0200 | U | | |
| WL | SO-IDW-DR26-WL | SW8080 - TCLP | HEPTACHLOR | 0.00 | µG/L | 0.0090 | U | | |
| WL | SO-IDW-DR26-WL | SW8080 - TCLP | HEPTACHLOR EPOXIDE | 0.00 | µG/L | 0.0070 | U | | |
| WL | SO-IDW-DR26-WL | SW8080 - TCLP | HEXA CHLOROBENZENE | 0.00 | µG/L | 0.0200 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | HEXA CHLOROBUTADIENE | 0.00 | µG/L | 2.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | HEXA CHLOROETHANE | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | MERCURY | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW7470 - TCLP | METHOXYCHLOR | 0.00 | µG/L | 0.0001 | U | | |
| WL | SO-IDW-DR26-WL | SW8080 - TCLP | METHYL ETHYL KETONE (2-BUTANONE) | 0.00 | µG/L | 0.0200 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | NITROBENZENE | 0.00 | µG/L | 0.0040 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | PENTACHLOROPHENOL | 0.00 | µG/L | 5.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | PHENOL | 0.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8270 - TCLP | PYRIDINE | 0.00 | µG/L | 10.0000 | U | | |
| WL | SO-IDW-DR26-WL | SW8150 - TCLP | SILVEX (2,4,5-TP) | 0.00 | µG/L | 0.0500 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | TETRACHLOROETHYLENE (PCE) | 0.00 | µG/L | 0.0005 | U | | |
| WL | SO-IDW-DR26-WL | SW8080 - TCLP | TOXAPHENE | 0.00 | µG/L | 0.5000 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | TRICHLOROETHYLENE (TCE) | 0.00 | µG/L | 0.0005 | U | | |
| WL | SO-IDW-DR26-WL | SW8240 - TCLP | VINYL CHLORIDE | 0.00 | µG/L | 0.0010 | U | | |
| SS | SO-IDW-DR32 | SW8240 | 1,1,1-TRICHLOROETHANE | 0.00 | MG/KG | 0.0007 | U | | |
| SS | SO-IDW-DR32 | SW8240 | 1,1,2,2-TETRACHLOROETHANE | 0.00 | MG/KG | 0.0015 | U | | |
| SS | SO-IDW-DR32 | SW8240 | 1,1,2-TRICHLOROETHANE | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR32 | SW8240 | 1,1,1-TRICHLOROETHANE | 0.00 | MG/KG | 0.0003 | U | | |
| SS | SO-IDW-DR32 | SW8240 | 1,1,2,2-TETRACHLOROETHANE | 0.00 | MG/KG | 0.0007 | U | | |
| SS | SO-IDW-DR32 | SW8240 | 1,1-TRICHLOROETHANE | 0.00 | MG/KG | 0.0015 | U | | |
| SS | SO-IDW-DR32 | SW8240 | 1,2-TRICHLOROETHANE | 0.00 | MG/KG | 0.0006 | U | | |
| SS | SO-IDW-DR32 | SW8240 | 1,2-DICHLOROPROPANE | 0.00 | MG/KG | 15.0000 | | | |
| SS | SO-IDW-DR32 | SW8240 | 2-CHLOROETHYL VINYL ETHER | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR32 | SW8240 | 2-HEXANONE | 0.00 | MG/KG | 0.0040 | U | | |
| SS | SO-IDW-DR32 | SW8240 | ACETONE | 0.00 | MG/KG | 0.0150 | U | | |
| SS | SO-IDW-DR32 | SW6010 | ALUMINUM | 15000.00 | MG/KG | | | | |
| SS | SO-IDW-DR32 | SW6010 | ANTIMONY | 8.60 | MG/KG | 8.0000 | J | | |
| SS | SO-IDW-DR32 | SW6010 | ARSENIC | 6.40 | MG/KG | 4.0000 | J | CI | |
| SS | SO-IDW-DR32 | SW6010 | BARIUM | 170.00 | MG/KG | 0.1000 | | | |
| SS | SO-IDW-DR32 | SW6010 | BENZENE | 0.00 | MG/KG | 0.0007 | U | | |
| SS | SO-IDW-DR32 | SW6010 | BERYLLIUM | 0.27 | MG/KG | 0.0300 | J | | |
| SS | SO-IDW-DR32 | SW8240 | BROMODICHLOROMETHANE | 0.00 | MG/KG | 0.0003 | U | | |
| SS | SO-IDW-DR32 | SW8240 | BROMOFORM | 0.00 | MG/KG | 0.0005 | U | | |

TABLE 3.2-1
Laboratory Analytical Results Containment Cell and Investigation-Derived Waste Drums
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier | Human Health Risk | Ecological Risk |
|--------|-----------------------|-------------|---|----------|-------|-----------------|---------------|-------------------|-----------------|
| SS | SO-IDW-DR32 | SW8240 | BROMOMETHANE | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR32 | SW6010 | CADMIUM | 4.90 | MG/KG | 0.3000 | J | AB CI | AB |
| SS | SO-IDW-DR32 | SW6010 | CALCIUM | 5400.00 | MG/KG | 3.0000 | | | |
| SS | SO-IDW-DR32 | SW8240 | CARBON DISULFIDE | 0.00 | MG/KG | 0.0030 | U | | |
| SS | SO-IDW-DR32 | SW8240 | CARBON TETRACHLORIDE | 0.00 | MG/KG | 0.0015 | U | | |
| SS | SO-IDW-DR32 | SW8240 | CHLOROBENZENE | 0.00 | MG/KG | 0.0005 | U | | |
| SS | SO-IDW-DR32 | SW8240 | CHLOROETHANE | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR32 | SW8240 | CHLOROFORM | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR32 | SW8240 | CHLORMETHANE | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR32 | SW6010 | CHROMIUM, TOTAL | 29.00 | MG/KG | 0.6000 | | | |
| SS | SO-IDW-DR32 | SW8240 | cis-1,2-DICHLOROETHYLENE | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR32 | SW8240 | cis-1,3-DICHLOROPROPENE | 0.00 | MG/KG | 0.0008 | U | | |
| SS | SO-IDW-DR32 | SW6010 | COBALT | 14.00 | MG/KG | 0.6000 | | | |
| SS | SO-IDW-DR32 | SW6010 | COPPER | 36.00 | MG/KG | 0.6000 | | | |
| SS | SO-IDW-DR32 | SW8240 | DIBROMOCHLOROMETHANE | 0.00 | MG/KG | 0.0008 | U | | |
| SS | SO-IDW-DR32 | SW8240 | ETHYLBENZENE | 0.03 | MG/KG | 0.0006 | | | |
| SS | SO-IDW-DR32 | SW6010 | IRON | 28000.00 | MG/KG | 0.6000 | | | |
| SS | SO-IDW-DR32 | SW6010 | LEAD | 36.00 | MG/KG | 4.0000 | J | AB | AB |
| SS | SO-IDW-DR32 | SW6010 | MAGNESIUM | 8100.00 | MG/KG | 5.0000 | | | |
| SS | SO-IDW-DR32 | SW6010 | MANGANESE | 460.00 | MG/KG | 0.1000 | | | |
| SS | SO-IDW-DR32 | SW8240 | METHYL ETHYL KETONE (2-BUTANONE) | 0.00 | MG/KG | 0.0050 | U | | |
| SS | SO-IDW-DR32 | SW8240 | METHYL ISOBUTYL KETONE (4-METHYL-2-PENTANONE) | 0.00 | MG/KG | 0.0030 | U | | |
| SS | SO-IDW-DR32 | SW8240 | METHYLENE CHLORIDE | 0.00 | MG/KG | 0.0008 | U | | |
| SS | SO-IDW-DR32 | SW6010 | MOLYBDENUM | 0.00 | MG/KG | 0.4000 | U | | |
| SS | SO-IDW-DR32 | SW6010 | NICKEL | 10.00 | MG/KG | 3.0000 | J | | |
| SS | SO-IDW-DR32 | SW6010 | POTASSIUM | 630.00 | MG/KG | 26.0000 | J | | |
| SS | SO-IDW-DR32 | SW6010 | SELENIUM | 0.00 | MG/KG | 5.0000 | U | | |
| SS | SO-IDW-DR32 | SW6010 | SILVER | 0.00 | MG/KG | 1.0000 | U | | |
| SS | SO-IDW-DR32 | SW6010 | SODIUM | 120.00 | MG/KG | 6.0000 | | | |
| SS | SO-IDW-DR32 | SW8240 | STYRENE | 0.00 | MG/KG | 0.0016 | U | | |
| SS | SO-IDW-DR32 | SW8240 | TETRACHLOROETHYLENE (PCE) | 0.00 | MG/KG | 0.0006 | U | | |
| SS | SO-IDW-DR32 | SW6010 | THALLIUM | 0.00 | MG/KG | 3.0000 | U | | |
| SS | SO-IDW-DR32 | SW8240 | TOLUENE | 0.19 | MG/KG | 0.0005 | | | |
| SS | SO-IDW-DR32 | SW8240 | TOTAL XYLENES | 0.19 | MG/KG | 0.0040 | | | |
| SS | SO-IDW-DR32 | SW8240 | trans-1,2-DICHLOROETHENE | 0.00 | MG/KG | 0.0005 | U | | |
| SS | SO-IDW-DR32 | SW8240 | trans-1,3-DICHLOROPROPENE | 0.00 | MG/KG | 0.0005 | U | | |
| SS | SO-IDW-DR32 | SW8240 | TRICHLOROETHYLENE (TCE) | 0.00 | MG/KG | 0.0006 | U | | |
| SS | SO-IDW-DR32 | SW6010 | VANADIUM | 55.00 | MG/KG | 0.6000 | | | |

TABLE 3.2-1
Laboratory Analytical Results Containment Cell and Investigation-Derived Waste Drums
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier | Human Health Risk | Ecological Risk |
|--------|-----------------------|---------------|------------------------------------|-------|-------|-----------------|---------------|-------------------|-----------------|
| SS | SO-IDW-DR32 | SW8240 | VINYL ACETATE | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR32 | SW8240 | VINYL CHLORIDE | 0.00 | MG/KG | 0.0010 | U | | |
| SS | SO-IDW-DR32 | SW6010 | ZINC | 95.00 | MG/KG | 0.4000 | | | |
| WL | SO-IDW-DR32-WL | SW6010 - TCLP | ARSENIC | 0.00 | MG/L | 0.0600 | U | | |
| WL | SO-IDW-DR32-WL | SW6010 - TCLP | BARIUM | 1.90 | MG/L | 0.0020 | | | |
| WL | SO-IDW-DR32-WL | SW6010 - TCLP | CADMIUM | 0.02 | MG/L | 0.0040 | J | | |
| WL | SO-IDW-DR32-WL | SW6010 - TCLP | CHROMIUM, TOTAL | 0.00 | MG/L | 0.0100 | U | | |
| WL | SO-IDW-DR32-WL | SW6010 - TCLP | LEAD | 0.18 | MG/L | 0.0600 | J | | |
| WL | SO-IDW-DR32-WL | SW6010 - TCLP | SELENIUM | 0.00 | MG/L | 0.0800 | U | | |
| WL | SO-IDW-DR32-WL | SW6010 - TCLP | SILVER | 0.00 | MG/L | 0.0200 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | 1,1-DICHLOROETHENE | 0.00 | MG/L | 0.0006 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | 1,2-DICHLOROETHANE | 0.00 | MG/L | 0.0008 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | 1,4-DICHLOROBENZENE | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | 2,4,5-TRICHLOROPHENOL | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | 2,4,6-TRICHLOROPHENOL | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8150 - TCLP | 2,4-D (DICHLOROPHENOXYACETIC ACID) | 0.00 | µG/L | 0.3000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | 2,4-DINITROTOLUENE | 0.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | 2-METHYLPHENOL (o-CRESOL) | 0.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | 3-METHYLPHENOL | 0.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | 4-METHYLPHENOL (p-CRESOL) | 0.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | BENZENE | 0.00 | MG/L | 0.0006 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | CARBON TETRACHLORIDE | 0.00 | MG/L | 0.0008 | U | | |
| WL | SO-IDW-DR32-WL | SW8080 - TCLP | CHLORDANE | 0.00 | µG/L | 0.0080 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | CHLOROBENZENE | 0.00 | MG/L | 0.0004 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | CHLOROFORM | 0.00 | MG/L | 0.0110 | J | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | CRESOLS, TOTAL | 0.00 | µG/L | 10.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8080 - TCLP | ENDRIN | 0.00 | µG/L | 0.0200 | U | | |
| WL | SO-IDW-DR32-WL | SW8080 - TCLP | GAMMA BHC (LINDANE) | 0.00 | µG/L | 0.0090 | U | | |
| WL | SO-IDW-DR32-WL | SW8080 - TCLP | HEPTACHLOR | 0.00 | µG/L | 0.0070 | U | | |
| WL | SO-IDW-DR32-WL | SW8080 - TCLP | HEPTACHLOR EPOXIDE | 0.00 | µG/L | 0.0200 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | HEXACHLOROBENZENE | 0.00 | µG/L | 2.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | HEXACHLOROBUTADIENE | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | HEXACHLOROETHANE | 0.00 | µG/L | 4.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW7470 - TCLP | MERCURY | 0.00 | MG/L | 0.0001 | U | | |
| WL | SO-IDW-DR32-WL | SW8080 - TCLP | METHOXYCHLOR | 0.00 | µG/L | 0.0200 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | METHYL ETHYL KETONE (2-BUTANONE) | 0.00 | MG/L | 0.0040 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | NITROBENZENE | 0.00 | µG/L | 5.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | PENTACHLOROPHENOL | 0.00 | µG/L | 3.0000 | U | | |

TABLE 3.2-1
Laboratory Analytical Results Containment Cell and Investigation-Derived Waste Drums
Indian Mountain Long Range Radar Station

| Matrix | Sample Identification | Test Method | Analyte | Value | Units | Detection Limit | Lab Qualifier | Human Health Risk | Ecological Risk |
|--------|-----------------------|---------------|---------------------------|-------|-------|-----------------|---------------|-------------------|-----------------|
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | PHENOL | 0.00 | µG/L | 3.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8270 - TCLP | PYRIDINE | 0.00 | µG/L | 10.0000 | U | | |
| WL | SO-IDW-DR32-WL | SW8150 - TCLP | SILVEX (2,4,5-TP) | 0.00 | µG/L | 0.0200 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | TETRACHLOROETHYLENE (PCE) | 0.00 | MG/L | 0.0005 | U | | |
| WL | SO-IDW-DR32-WL | SW8080 - TCLP | TOXAPHENE | 0.00 | µG/L | 0.5000 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | TRICHLOROETHYLENE (TCE) | 0.00 | MG/L | 0.0005 | U | | |
| WL | SO-IDW-DR32-WL | SW8240 - TCLP | VINYL CHLORIDE | 0.00 | MG/L | 0.0010 | U | | |

NOTES:

MG/KG = milligrams per kilogram

MG/L = milligrams per liter

µG/L = micrograms per liter

% = percent

AB = Exceeds the maximum background value for the medium

CC01 = Containment cell

CI = Industrial carcinogenic 10^{-6} soil only - human health PRG (Preliminary Remediation Goal)

IDW = Investigation-derived waste drum

J = Estimated

SS = Surface soil

U = Undetected (analyzed for but undetected)

WL = Leachate

All samples are composite samples

TABLE 3.2-2
Mean Analyte Concentrations
Containment Cell and IDW Drums
Indian Mountain Long Range Radar Station

| CONTAINMENT CELL | Value | Units |
|---|----------|-------|
| DIESEL RANGE ORGANIC COMPOUNDS | 40.00 | MG/KG |
| GASOLINE RANGE ORGANIC COMPOUNDS | 0.85 | MG/KG |
| ALKALINITY, BICARBONATE (AS CACO ₃) | 657.00 | MG/L |
| ALKALINITY, TOTAL (AS CaCO ₃) | 657.00 | MG/L |
| IRON | 36667.00 | MG/KG |
| NITROGEN, KJELDAHL, TOTAL | 433.00 | MG/KG |
| PERCENT MOISTURE | 20.00 | % |
| PHOSPHORUS (AS P) | 380.00 | MG/KG |
| TOTAL PHOSPHORUS (AS PO ₄) | 1163.00 | MG/KG |
| INVESTIGATION-DERIVED WASTE DRUMS | | |
| ACETONE * | 0.04 | MG/KG |
| ALUMINUM | 18000.00 | MG/KG |
| ARSENIC | 6.90 | MG/KG |
| BARIUM | 180.00 | MG/KG |
| BERYLLIUM | 0.35 | MG/KG |
| CADMIUM | 5.10 | MG/KG |
| CALCIUM | 6650.00 | MG/KG |
| CHROMIUM, TOTAL | 31.50 | MG/KG |
| COBALT | 16.00 | MG/KG |
| COPPER | 45.00 | MG/KG |
| ETHYLBENZENE | 0.05 | MG/KG |
| IRON | 33000.00 | MG/KG |
| LEAD | 40.00 | MG/KG |
| MAGNESIUM | 9000.00 | MG/KG |
| MANGANESE | 520.00 | MG/KG |
| METHYL ETHYL KETONE (2-BUTANONE) * | 0.02 | MG/KG |
| NICKEL | 9.70 | MG/KG |
| POTASSIUM | 660.00 | MG/KG |
| SODIUM | 240.00 | MG/KG |
| THALLIUM * | 5.20 | MG/KG |
| TOLUENE | 0.42 | MG/KG |
| TOTAL XYLENES | 0.42 | MG/KG |
| VANADIUM | 69.00 | MG/KG |
| ZINC | 97.00 | MG/KG |
| INVESTIGATION-DERIVED WASTE LEACHATE | | |
| 4-METHYLPHENOL (p-CRESOL) * | 41.00 | µG/L |
| BARIUM | 1.80 | MG/L |
| CADMIUM * | 0.02 | MG/L |
| LEAD * | 0.18 | MG/L |
| CRESOLS, TOTAL * | 41.00 | µG/L |

NOTES:

MG/KG = milligrams per kilogram

MG/L = milligrams per liter

µG/L = micrograms per liter

% = percent

* = detected in one sample

The following discussion describes contaminants detected in 1995 IDW drum and containment cell samples. An evaluation of potential human health or ecological risk of negative effects associated with detected contaminants is provided when appropriate.

Metals. The concentrations of the metals cadmium and lead detected in Drums 26 and 32 were slightly above the background 99 percent upper tolerance limit (UTL) calculated with 95 percent confidence for surface soil using 1994 analytical results. These samples were designated SO-IDW-DR26 and -DR32. The background levels are shown in Table 3.2-3. The cadmium detections were below the background 99 percent UTL with 95 percent confidence for both sediment and subsurface soil. The lead levels were below the UTL for sediment and slightly greater than the subsurface soil UTL. The 1995 detections were about 10 percent greater than the surface soil UTLs and significantly below the sediment UTLs. Arsenic concentrations in both IDW samples exceeded the human health risk-based screening level, but were below background levels measured at the site in 1994. The metals concentrations are not considered a human health or ecological concern because the levels are generally within the range of background concentrations measured at Indian Mountain. Background levels for all media, and an explanation of their derivations, were included in Section 3.1 of the final RI/FS Report (Air Force 1995c). The 1994 background levels for sediment, surface soil, and subsurface soil are included in Table 3.2-3.

GRO and DRO. Three composited containment cell samples, designated SO-CC01-CS01 through -CS03, were analyzed for GRO and DRO content. Detections were well below the most stringent Alaska non-underground storage tank (UST) levels (Alaska Department of Environmental Conservation [ADEC] 1991). The cleanup level used for diesel range petroleum hydrocarbon compounds is 100 mg/kg. The level used for gasoline range petroleum compounds is 40 mg/kg. The test kit analyses indicated that greater than 200 ppm GRO (or 300 ppm DRO) was present in the soils.

TABLE 3.2-3
1994 Background Metals Levels
UTL Estimates for Sediment
(mg/kg)

| ANALYTE | MEAN | STD | CV | N | K(.95,.95) | UTL(.95,.95) | K(.95,.99) | UTL(.95,.99) |
|-----------|-----------|------------|-----------|---|------------|--------------|------------|--------------|
| Aluminum | 2.604E+04 | 1.030E+04 | 3.956E-01 | 8 | 3.188 | 5.888E+04 | 4.355 | 7.090E+04 |
| Antimony | 4.856E+00 | 1.987E+00 | 4.092E-01 | 8 | 3.188 | 1.119E+01 | 4.355 | 1.351E+01 |
| Arsenic | 6.300E+00 | 2.500E+00 | 3.968E-01 | 8 | 3.188 | 1.4227E+01 | 4.355 | 1.719E+01 |
| Barium | 6.330E+02 | 6.481E+02 | 1.024E+00 | 8 | 3.188 | 2.699E+03 | 4.355 | 3.456E+03 |
| Beryllium | 5.963E-01 | 3.514E-01 | 5.894E-01 | 8 | 3.188 | 1.717E+00 | 4.355 | 2.127E+00 |
| Cadmium | 3.499E+00 | 2.6222E+00 | 7.495E-01 | 8 | 3.188 | 1.186E+01 | 4.355 | 1.492E+01 |
| Calcium | 8.264E+03 | 7.331E+03 | 8.871E-01 | 8 | 3.188 | 3.163E+04 | 4.355 | 4.019E+04 |
| Chromium | 1.881E+01 | 8.904E+00 | 4.733E-01 | 8 | 3.188 | 4.720E+01 | 4.355 | 5.759E+01 |
| Cobalt | 1.599E+01 | 5.233E+00 | 3.273E-01 | 8 | 3.188 | 3.267E+01 | 4.355 | 3.878E+01 |
| Copper | 4.229E+01 | 2.230E+01 | 5.274E-01 | 8 | 3.188 | 1.134E+02 | 4.355 | 1.394E+02 |
| Iron | 3.666E+04 | 1.276E+04 | 3.480E-01 | 8 | 3.188 | 7.734E+04 | 4.355 | 9.223E+04 |
| Lead | 5.114E+01 | 9.354E+01 | 1.829E+00 | 8 | 3.188 | 3.493E+02 | 4.355 | 4.585E+02 |
| Magnesium | 8.051E+03 | 1.049E+03 | 1.303E-01 | 8 | 3.188 | 1.140E+04 | 4.355 | 1.262E+04 |
| Manganese | 8.051E+02 | 4.366E+02 | 5.422E-01 | 8 | 3.188 | 2.197E+03 | 4.355 | 2.706E+03 |
| Nickel | 1.471E+01 | 5.830E+00 | 3.963E-01 | 8 | 3.188 | 3.330E+01 | 4.355 | 4.010E+01 |
| Potassium | 1.305E+03 | 8.307E+02 | 6.365E-01 | 8 | 3.188 | 3.953E+03 | 4.355 | 4.923E+03 |
| Selenium | 2.039E+01 | 2.324E+01 | 1.140E+00 | 8 | 3.188 | 9.447E+01 | 4.355 | 1.216E+02 |
| Sodium | 3.746E+02 | 3.087E+02 | 8.241E-01 | 8 | 3.188 | 1.359E+03 | 4.355 | 1.719E+03 |
| Thallium | 1.190E+01 | 1.067E+01 | 8.962E-01 | 8 | 3.188 | 4.591E+01 | 4.355 | 5.835E+01 |
| Vanadium | 6.986E+01 | 2.128E+01 | 3.046E-01 | 8 | 3.188 | 1.377E+02 | 4.355 | 1.625E+02 |
| Zinc | 2.079E+02 | 2.770E+02 | 1.333E+00 | 8 | 3.188 | 1.091E+03 | 4.355 | 1.414E+03 |

TABLE 3.2-3
1994 Background Metals Levels
UTL Estimates for Surface Soil
(mg/kg)

| ANALYTE | MEAN | STD | CV | N | K(.95,.95) | UTL(.95,.95) | K(.95,.99) | UTL(.95,.99) |
|-----------|-----------|-----------|-----------|---|------------|--------------|------------|--------------|
| Aluminum | 1.339E+04 | 7.313E+03 | 5.460E-01 | 5 | 4.21 | 4.418E+04 | 5.749 | 5.544E+04 |
| Antimony | 4.580E+00 | 1.997E+00 | 4.360E-01 | 5 | 4.21 | 1.299E+01 | 5.749 | 1.606E+01 |
| Barium | 1.594E+02 | 6.609E+01 | 4.146E-01 | 5 | 4.21 | 4.377E+02 | 5.749 | 5.394E+02 |
| Beryllium | 3.010E-01 | 8.127E-02 | 2.700E-01 | 5 | 4.21 | 6.432E-01 | 5.749 | 7.682E-01 |
| Cadmium | 1.360E+00 | 5.067E-01 | 3.726E-01 | 5 | 4.21 | 3.493E+00 | 5.749 | 4.273E+00 |
| Calcium | 2.846E+03 | 6.885E+02 | 2.419E-01 | 5 | 4.21 | 5.745E+03 | 5.749 | 6.804E+03 |
| Chromium | 1.196E+01 | 7.177E+00 | 6.001E-01 | 5 | 4.21 | 4.217E+01 | 5.749 | 5.322E+01 |
| Cobalt | 1.087E+01 | 6.378E+00 | 5.868E-01 | 5 | 4.21 | 3.772E+01 | 5.749 | 4.754E+01 |
| Copper | 1.864E+01 | 1.240E+01 | 6.652E-01 | 5 | 4.21 | 7.084E+01 | 5.749 | 8.992E+01 |
| Iron | 2.348E+04 | 1.381E+04 | 5.884E-01 | 5 | 4.21 | 8.164E+04 | 5.749 | 1.029E+05 |
| Lead | 8.820E+00 | 4.926E+00 | 5.585E-01 | 5 | 4.21 | 2.956E+01 | 5.749 | 3.714E+01 |
| Magnesium | 5.500E+03 | 3.058E+03 | 5.560E-01 | 5 | 4.21 | 1.838E+04 | 5.749 | 2.308E+04 |
| Manganese | 7.112E+02 | 8.985E+02 | 1.263E+00 | 5 | 4.21 | 4.494E+03 | 5.749 | 5.877E+03 |
| Nickel | 1.018E+01 | 5.451E+00 | 5.355E-01 | 5 | 4.21 | 3.313E+01 | 5.749 | 4.152E+01 |
| Potassium | 1.064E+03 | 6.999E+02 | 6.578E-01 | 5 | 4.21 | 4.011E+03 | 5.749 | 5.088E+03 |
| Sodium | 1.084E+02 | 6.532E+01 | 6.026E-01 | 5 | 4.21 | 3.834E+02 | 5.749 | 4.840E+02 |
| Vanadium | 4.222E+01 | 2.373E+01 | 5.621E-01 | 5 | 4.21 | 1.421E+02 | 5.749 | 1.787E+02 |
| Zinc | 4.518E+01 | 1.288E+01 | 2.850E-01 | 5 | 4.21 | 9.939E+01 | 5.749 | 1.192E+02 |

TABLE 3.2-3
1994 Background Metals Levels
UTL Estimates for Subsurface Soil
(mg/kg)

| ANALYTE | MEAN | STD | CV | N | K(.95,.95) | UTL(.95,.95) | K(.95,.99) | UTL(.95,.99) |
|-----------|-----------|-----------|-----------|---|------------|--------------|------------|--------------|
| Aluminum | 1.451E+04 | 5.772E+03 | 3.979E-01 | 5 | 4.21 | 3.881E+04 | 5.749 | 4.769E+04 |
| Antimony | 3.620E+00 | 2.449E+00 | 6.765E-01 | 5 | 4.21 | 1.393E+01 | 5.749 | 1.770E+01 |
| Barium | 2.163E+02 | 1.409E+02 | 6.513E-01 | 5 | 4.21 | 8.093E+02 | 5.749 | 1.026E+03 |
| Beryllium | 3.040E-01 | 1.670E-01 | 5.493E-01 | 5 | 4.21 | 1.007E+00 | 5.749 | 1.264E+00 |
| Cadmium | 1.512E+00 | 9.357E-01 | 6.188E-01 | 5 | 4.21 | 5.451E+00 | 5.749 | 6.891E+00 |
| Calcium | 3.440E+03 | 2.405E+03 | 6.991E-01 | 5 | 4.21 | 1.356E+04 | 5.749 | 1.727E+04 |
| Chromium | 1.270E+01 | 4.177E+00 | 3.289E-01 | 5 | 4.21 | 3.029E+01 | 5.749 | 3.672E+01 |
| Cobalt | 1.060E+01 | 4.777E+00 | 4.507E-01 | 5 | 4.21 | 3.071E+01 | 5.749 | 3.806E+01 |
| Copper | 2.210E+01 | 1.313E+01 | 5.940E-01 | 5 | 4.21 | 7.736E+01 | 5.749 | 9.756E+01 |
| Iron | 2.360E+04 | 1.128E+04 | 4.781E-01 | 5 | 4.21 | 7.110E+04 | 5.749 | 8.846E+04 |
| Lead | 8.880E+00 | 2.666E+00 | 3.002E-01 | 5 | 4.21 | 2.010E+01 | 5.749 | 2.421E+01 |
| Magnesium | 5.452E+03 | 3.409E+03 | 6.253E-01 | 5 | 4.21 | 1.980E+04 | 5.749 | 2.505E+04 |
| Manganese | 3.374E+02 | 2.495E+02 | 7.394E-01 | 5 | 4.21 | 1.388E+03 | 5.749 | 1.772E+03 |
| Nickel | 9.820E+00 | 2.845E+00 | 2.897E-01 | 5 | 4.21 | 2.180E+01 | 5.749 | 2.617E+01 |
| Potassium | 9.926E+02 | 7.670E+02 | 7.727E-01 | 5 | 4.21 | 4.222E+03 | 5.749 | 5.402E+03 |
| Selenium | 1.236E+01 | 2.220E+01 | 1.796E+00 | 5 | 4.21 | 1.058E+02 | 5.749 | 1.400E+02 |
| Sodium | 1.312E+02 | 1.900E+02 | 1.448E+00 | 5 | 4.21 | 9.312E+02 | 5.749 | 1.224E+03 |
| Thallium | 7.557E+00 | 1.043E+01 | 1.380E+00 | 5 | 4.21 | 5.145E+01 | 5.749 | 6.749E+01 |
| Vanadium | 4.652E+01 | 2.156E+01 | 4.634E-01 | 5 | 4.21 | 1.373E+02 | 5.749 | 1.704E+02 |
| Zinc | 4.784E+01 | 2.164E+01 | 4.524E-01 | 5 | 4.21 | 1.390E+02 | 5.749 | 1.723E+02 |

NOTES:

CV = coefficient of variation = STD/MEAN

K = Tabulated Factor (Gilbert 1987)

mg/kg = milligrams per kilogram

MEAN = sample mean

N = sample size

p = quantile

STD = sample standard deviation

UTL = upper tolerance level

UTL(1 - α , p) = MEAN + K(1 - α , p)*STD

1 - α = confidence level

The laboratory results and test kit results do not correlate. This lack of agreement may be linked to the presence of naphthalene in the soils. Naphthalene can interfere with the test kit analyses by causing false-positive results, even at low concentrations. A review of the 1994 analytical results for the soils added to the cell suggests that naphthalene was detected in a majority of the laboratory samples. SVOC analyses, which include naphthalene, were not performed on the samples collected in 1995. Therefore, it is likely that the combination of petroleum hydrocarbons and associated constituents in the soils resulted in a higher detected concentration in the test kit samples than was measured in the laboratory samples.

Physical Characteristics and Nutrients. Soil characteristics, including nutrients, were measured in laboratory samples designated SO-CC01-CS04 through -CS06. The mean moisture content measured in the nutrient samples was 20 percent. According to Wise and Trantolo (1994), the optimal range of water content (20 to 40 percent by weight) for a given site will depend on soil type, permeability, and contaminant saturation. According to EPA research (EPA 1993), 40 to 80 percent moisture is desirable, and the rate of degradation is moisture limited below 40 percent. Because of seasonal temperature and precipitation changes, the amount of water in the soils will probably fluctuate after the cell has been sitting undisturbed. It may be useful to measure soil moisture content in 1996 to evaluate whether sufficient water for metabolic activity exists in the soils. Nutrients measured included the following: phosphorus, alkalinity, iron, and nitrogen. None of the levels were abnormal, although these measurements will be more meaningful if compared to a future data set. Bioremediation sources recommend nitrogen to phosphorus ratios ranging from 10:1 to 5:1. The ratio of the mean concentrations of total nitrogen and total phosphorus is 1:2.6. This ratio suggests that nutrient deficiency may limit the rate of destruction.

Temperature, carbon dioxide (CO₂), and oxygen (O₂) measurements were made in containment cell soils six days after the soils were placed in the cell and covered. The

CO₂ concentration was 0.07 percent and the O₂ was 21 percent. These levels are normal, although a decrease in O₂ and an increase in CO₂ concentrations should occur during periods of biodegradation. The concentration of CO₂ in soil gas depends on the presence of O₂, and vice versa. Microbial and plant activity use O₂ and generate CO₂. In addition, moisture content and soil aeration can control gas flow through soils. From 2 to 4 percent O₂ is required to maintain aerobic conditions. The soil temperature was 57.8 degrees (°) Fahrenheit (F) when the ambient temperature was approximately 54° F. These measurements made during and after cell construction will serve as baseline data. Some or all of the parameters may be measured in the future to monitor biological activity. Future data can also be used to evaluate the need for moisture or nutrient supplementation.

4.0 CONCLUSIONS

The ditch and sampling port will be inspected periodically to ensure that the ditch is effective. Water samples will be collected from the sampling port annually for up to five years to evaluate contaminant levels migrating from source area SS10. Such sampling would be incorporated into the primary FS alternative for SS10, natural attenuation and long term monitoring. Although water was seeping into the ditch, it was not possible to determine whether 100 percent diversion was achieved. Future monitoring of the area, including visual observation of downgradient seeps, will be required to determine whether the diversion was successful. These data will be useful for remedial alternative evaluation because fuel concentrations in water will indicate whether solution of contaminants by water is a significant transport mechanism.

Containment cell soil samples did not contain organic contaminants above risk-based screening criteria. DRO and GRO were not detected above the minimum Alaska levels for USTs. The petroleum hydrocarbon test kit results did not correlate with the laboratory samples. As mentioned earlier, the presence of other fuel-related

Final

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compounds may have interfered with the test kit analyses. The Work Plan and SAP Addendum (Air Force 1995a) recommended that periodic test kit analysis of the cell soils be performed to monitor petroleum hydrocarbon degradation. Based on the results presented in this report, test kit monitoring is no longer recommended. Therefore, 1996 sampling plans for the containment cell will include composite sample collection for DRO, GRO, SVOC, and VOC laboratory analyses. DRO and GRO results are recommended for continuity, and SVOC and VOC data are necessary to determine contaminant presence and levels in the containment cell soils. Samples may also be analyzed for a suite of nutrient and physical parameters to compare to the baseline cell data collected in 1995. Temperature, CO₂, and O₂ should also be monitored at this time. The laboratory results will be evaluated to determine if continued operation of the cell is necessary, and if so, if specific nutrients should be added to enhance biodegradation. If the data indicate that treatment is complete, disposal options for the soils will be considered and implemented.

5.0 REFERENCES

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APPENDIX A

OT08 TEST PIT FIELD SAMPLING FORMS

SURFACE AND SUBSURFACE SOIL SAMPLING FIELD DATA FORM

PROJECT NAME: INDIAN MOUNTAIN LRRS

PROJECT NUMBER: 05G46200

SITE ID: OT08

OT08-SS08 Loc ID

SAMPLE ID: SO-OT08-SS08

LOT CONTROL NO. IN-A10001

DATE: 8/11/95

TIME: 1030

WEATHER: Overcast, 50

FIELD SAMPLING TEAM: S. Brown, B. Davidson

SAMPLING LOCATION: Lab sample collected from 0.5-1' depth

Approx 50' south of the CORI marker on the

South side of OT08 - Location is across roadway from CORI.

COMPOSITE: YES/NO COMPOSITE DESCRIPTION: collection of soils from one depth

DEPTH OF SAMPLING INTERVAL: 0.5-1', 2.5-3', 4.5-5' VOLUME COLLECTED: 1 4oz jar

HEADSPACE READINGS: _____

3 test kit samples

DESCRIPTION OF SOIL MATERIALS:

Medium brown silty soil with 40% gravel and angular boulders. Did not encounter bedrock or water. Water did slowly seep in from bottom.

FIELD TEST KIT SCREENING TPH: _____

PCB: Arcolet 1260

SAMPLE IDs:

RESULTS:

| | |
|----------------|---------------------------|
| <u>SS08-01</u> | <u>ND, < 1 ppm</u> |
| <u>SS08-02</u> | <u>NA ND 8/12/95</u> |
| <u>SS08-03</u> | <u>NA</u> |
| | <u>ND = none detected</u> |
| | <u>NA = not analyzed</u> |

DATE AND TIME OF TEST KIT SCREENING 1530 8/11/95 (8/12/95)

COMPLETED BY:

Sarah Brown

PRINT NAME

Sarah Brown

SIGNATURE

8/11/95

DATE

CHECKED BY:

PRINT NAME

SIGNATURE

DATE

SURFACE AND SUBSURFACE SOIL SAMPLING FIELD DATA FORM

PROJECT NAME: INDIAN MOUNTAIN LRRS

PROJECT NUMBER: 05G46200

LOC ID OT08-SS09

SITE ID: OT08

SAMPLE ID: SO-OT08-SB03

LOT CONTROL NO. IN-A100101

DATE: 8/11/95

TIME: 1045

WEATHER: Overcast, 50°F

FIELD SAMPLING TEAM: S. Brown, B. Davidson

SAMPLING LOCATION: lab sample collected from 4.5-5' depth

Approx 130' SE of COR1 marker on south side
of OT08. Near area of former diesel tanks

SS09
SB03

COMPOSITE: YES NO

COMPOSITE DESCRIPTION: A collection of soil from each depth

0.5-1', 2.5-3'

DEPTH OF SAMPLING INTERVAL: and 4.5-5' VOLUME COLLECTED: 1 4oz and

3 2oz test kit samples

HEADSPACE READINGS: _____

- all for PCB analysis

DESCRIPTION OF SOIL MATERIALS:

Gray, silty/clayey, moist soils with 40-50% gravel and boulders. Sheen on soils and strong degraded fuel odor.
Water trickled in about 1' bgs. Bedrock not encountered

FIELD TEST KIT SCREENING TPH: _____

PCB: X Arco/Or 1260

SAMPLE IDs:

RESULTS:

| | |
|----------------|--------------------------|
| <u>SS09-01</u> | <u>>1, <10 ppm</u> |
| <u>SS09-02</u> | <u>NA ND 8/12/95</u> |
| <u>SS09-03</u> | <u>NA</u> |
| | <u>NA= not analyzed</u> |
| | <u>ND= not detected</u> |

DATE AND TIME OF
TEST KIT SCREENING 8/11/95 1530

COMPLETED BY:

Sarah Brown

PRINT NAME

Sarah Brown

SIGNATURE

8/11/95

DATE

CHECKED BY:

PRINT NAME

SIGNATURE

DATE

SURFACE AND SUBSURFACE SOIL SAMPLING FIELD DATA FORM

PROJECT NAME: INDIAN MOUNTAIN LRRS

PROJECT NUMBER: 05G46200

SITE ID: OT08

SAMPLE ID: variety/no lab LOT CONTROL NO. _____

DATE: 8/9/95 TIME: 1145 - 1315

WEATHER: cloudy, breezy, 50°F

FIELD SAMPLING TEAM: S. Brown & R. Henry

SAMPLING LOCATION:

1st two were along the road btwn the last switchback and Top Camp. 3rd & 4th were on north side of lower bench

COMPOSITE: YES/NO COMPOSITE DESCRIPTION: _____

DEPTH OF SAMPLING INTERVAL: 0-6", 2.5', 5' VOLUME COLLECTED: 20g each

HEADSPACE READINGS: not meas'd

DESCRIPTION OF SOIL MATERIALS:

med to dark brown silty soils with occasional clay nodules that are gray. typical to observe fuel sheen & degraded fuel odor. H₂O at 2-2.5' in SS05 SB01, & SB02; at 4-5' in new1; not encountered in new2. Permafrost was encountered in new2 at

FIELD TEST KIT SCREENING TPH: _____

PCB: X

Aroclor 1240 4-5'. Bedrock
RESULTS: at 5' in new1.

SAMPLE IDs:

| | |
|-------------------------------------|---|
| <u>SB01 - same location as 1994</u> | <u>Surf->10, <40; 2.5'->40; 5' - ND</u> |
| <u>SB02 - "</u> | <u>surf. > 40; 2.5' > 40; 5' -> 40</u> |
| <u>SS05 - "</u> | <u>surf. > 40; 2.5' > 1, < 10; 5' - NA</u> |
| <u>New1 - 20' SE of SB02</u> | <u>surf. > 10, < 40; 2.5' - ND; 5' - NA</u> |
| <u>New2 - 35' SE of pond</u> | <u>surf ND; 2.5' ND; 5' - NA</u> |

Detection limits
1, 10, 40 ppm

DATE AND TIME OF
TEST KIT SCREENING 8/9 7-10:30 and
8/10 8-9 am

COMPLETED BY:

Sarah Brown

PRINT NAME

Sarah Brown

SIGNATURE

SB
8/9 & 10/95

DATE

CHECKED BY:

PRINT NAME

SIGNATURE

DATE

SURFACE AND SUBSURFACE SOIL SAMPLING FIELD DATA FORM

PROJECT NAME: INDIAN MOUNTAIN LRRS

LOC ID OT08-SS10

PROJECT NUMBER: 05G46200

SITE ID: OT08

IN-A100201

SAMPLE ID: SO-OT08-SS10 and LOT CONTROL NO. IN-A100301

DATE: 8/11/95 SO-OT08-SB04 TIME: 1221 ± 1224 (1228:00) CCC

WEATHER: Overcast, 50°F

FIELD SAMPLING TEAM: S. Brown, R. Henry

SAMPLING LOCATION: Lab samples collected from 0.5-1' and 2.5-3.0' depths

Approx. 80' west of SB01 ± 60' south of COR4
marker.

COMPOSITE: YES NO COMPOSITE DESCRIPTION: each interval, between rocks

DEPTH OF SAMPLING INTERVAL: 0.5-1', 2.5-3', and 4.5-5' VOLUME COLLECTED: 1-4 oz for each lab sample
± 20 g for each test kit

HEADSPACE READINGS: _____

all for PCB analysis

DESCRIPTION OF SOIL MATERIALS:

Permafrost and fractured bedrock were encountered at 5' bgs.
No major water seepage observed. Gray, silty soil with
50% gravel and boulders.

FIELD TEST KIT SCREENING TPH: _____ PCB: X Aractol 1260

SAMPLE IDs:

RESULTS:

| | |
|----------------|--------------------------|
| <u>SS10-01</u> | <u>ND</u> |
| <u>SS10-02</u> | <u>ND</u> |
| <u>SS10-03</u> | <u>ND</u> |
| | |
| | <u>ND = not detected</u> |

DATE AND TIME OF
TEST KIT SCREENING 8/11 & 8/12/95

COMPLETED BY:

Sarah Brown
PRINT NAME

Sarah Brown
SIGNATURE

8/11/95
DATE

CHECKED BY:

PRINT NAME SIGNATURE DATE

SURFACE AND SUBSURFACE SOIL SAMPLING FIELD DATA FORM

PROJECT NAME: INDIAN MOUNTAIN LRRS

PROJECT NUMBER: 05G46200

LOC ID OT08-SSII

SITE ID: OT08

SAMPLE ID: SO-OT08-SB05

LOT CONTROL NO. IN-A100401

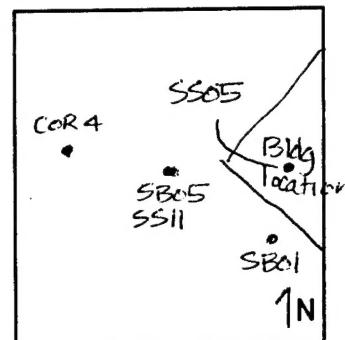
DATE: 8/11/95

TIME: 1247 (1250 on COC)

WEATHER: Overcast, 50°F

FIELD SAMPLING TEAM: S. Brown, R. Henry

SAMPLING LOCATION: Lab sample collected from 2.5-3' depth
east of COR4 and west of SS05 (1994 location)



COMPOSITE: YES/NO

COMPOSITE DESCRIPTION: specific depth

DEPTH OF SAMPLING INTERVAL: 0.5-1', 2.5-3' and 4.5-5'

VOLUME COLLECTED: 1-4oz jar for lab

HEADSPACE READINGS: _____

1.20g sample for

test kits

-all for PCB analysis

DESCRIPTION OF SOIL MATERIALS:

Soil/rock composition is similar to other pits. Permafrost
and fractured bedrock were encountered at 5' bgs. Soil
became moist and 4.5'. Very rocky throughout pit.

FIELD TEST KIT SCREENING TPH: _____

PCB: Aroclor 1260

SAMPLE IDs:

RESULTS:

| | |
|-----------------|---|
| <u>SSII-C1</u> | <u>>1, <10 ppm</u> |
| <u>SSII -02</u> | <u>ND</u> |
| <u>SSII -03</u> | <u>NA</u> |
| | |
| | <u>ND = not detected</u> <u>NA = not analyzed</u> |

DATE AND TIME OF
TEST KIT SCREENING 8/11/95

COMPLETED BY:

Sarah Brown
PRINT NAME

Sarah Brown
SIGNATURE

8/11/95
DATE

CHECKED BY:

PRINT NAME

SIGNATURE

DATE

SURFACE AND SUBSURFACE SOIL SAMPLING FIELD DATA FORM

PROJECT NAME: INDIAN MOUNTAIN LRRS

PROJECT NUMBER: 05G46200

LOC ID OT08-SS12

SITE ID: OT08

SAMPLE ID: SO-OT08-SS12

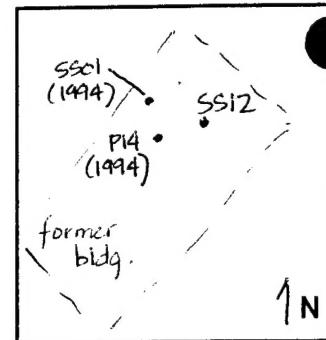
LOT CONTROL NO. IN-A100501

DATE: 8/11/95

TIME: 1310

WEATHER: Overcast 50°F

FIELD SAMPLING TEAM: S. Brown, R. Henry



SAMPLING LOCATION: Lab sample collected from 0.5 - 1' depth
location is SE of 1994 location SS01. Location
is near proposed diversion ditch path

COMPOSITE: YES NO COMPOSITE DESCRIPTION: Soils composited at each interval

DEPTH OF SAMPLING INTERVAL: 0.5 - 1' VOLUME COLLECTED: 1-4 oz for lab
1-2 oz for test kit
- all for PCB analysis

HEADSPACE READINGS: _____

DESCRIPTION OF SOIL MATERIALS:

Fine-grained, med. brown silty soil with some gravel and construction debris, cables and wood. Finished excavation at 2' bgs because excessive building debris was encountered.

FIELD TEST KIT SCREENING TPH: _____ PCB: X Arcolet 1260

SAMPLE IDs:

RESULTS:

| | |
|------------------|---------------------|
| <u>SS12 - C1</u> | <u>Not detected</u> |
| | |
| | |
| | |
| | |

DATE AND TIME OF
TEST KIT SCREENING 8/11/95

COMPLETED BY:

Sarah Brown

PRINT NAME

Sarah Brown

SIGNATURE

8/11/95

DATE

CHECKED BY:

PRINT NAME

SIGNATURE

DATE

SURFACE AND SUBSURFACE SOIL SAMPLING FIELD DATA FORM

PROJECT NAME: INDIAN MOUNTAIN LRRS

PROJECT NUMBER: 05G46200

SITE ID: OT08

LOC ID OT08-
SS13

SAMPLE ID: SO-OT08-SS13 LOT CONTROL NO. IN-A100601

DATE: 8/11/95 and SO-OT08-SB06 TIME: 1326 & 1332

WEATHER: overcast, 50°F

FIELD SAMPLING TEAM: S Brown and R. Henry

SAMPLING LOCATION: Lab samples collected from 0.5'- and 2.5-3' bgs

NW side of OT08 and 1994 location SS13

NW of diversion ditch.

COMPOSITE: YES/NO

COMPOSITE DESCRIPTION: Soils were composited at each interval

DEPTH OF SAMPLING INTERVAL: 0.5-1', 2.5-3', and 4.5-5' VOLUME COLLECTED: 1-4 oz for each lab sample

and 20g for test kits
- all for PCB analysis

HEADSPACE READINGS: _____

DESCRIPTION OF SOIL MATERIALS:

Heavy degraded fuel odor and sheen on gray silty/clayey soils containing 70% gravel and small boulders. Water was encountered about 4' bgs. Six inches of peat material at surface

FIELD TEST KIT SCREENING TPH: _____

PCB: Alcohol 176C

SAMPLE IDs:

RESULTS:

| | |
|----------------|-------------------|
| <u>SS13-C1</u> | ND |
| <u>SS13-C2</u> | ND |
| <u>SS13-C3</u> | NA |
| | ND = not detected |
| | NA = not analyzed |

DATE AND TIME OF TEST KIT SCREENING 8/11/95

COMPLETED BY:

Sarah Brown
PRINT NAME

Sarah Brown
SIGNATURE

8/11/95
DATE

CHECKED BY:

PRINT NAME _____ SIGNATURE _____ DATE _____